

The Iron Age

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Steel vs. Iron in the Construction of Steam Boilers.

A paper was read before the Institution of Civil Engineers by Mr. David Salmond Smart, in which he referred to the statement that mild steel, being from 30 to 36 per cent. stronger than iron, enables it to be advantageously used in boiler construction. It is superior to iron in general ductility, but this is a quality of which it has sometimes been found deficient, causing a lack of implicit confidence. Most of the mistrust, however, has been the result of want of knowledge of the material and of the methods of its successful manipulation. Some brands of steel will in general weld like iron, while other brands will break like cast iron under the hammer, and cannot be reliably welded. Notwithstanding the defects which have been from time to time found, no serious accident has yet occurred with a steel boiler, nor anything sufficiently detrimental to check the use of steel. It cannot yet definitely be said what deteriorating effect long service may have on steel boilers as compared with those of iron, but from experiments quoted it may be inferred that it would be less. Steel rivets are now extensively employed in boiler construction, and with increasing favor. They should be heated in furnaces with an even temperature. With care and the improvement of the material, there is no doubt steel riveting will become general. It is desirable that not only the rivets, but all the other parts of steel boilers, should be of steel, to prevent the corrosive action of that metal on iron when in electrical combination. When iron and steel are not combined, steel suffers rather more than iron. The presence of local defects in steel is manifested by the action of corrosion. When steel is exposed to corrosion, the oxide scale on it causes rapid decay of those parts not covered by it; therefore the scale should always be removed. In choosing iron plates a thorough knowledge of the different brands is requisite, as they are very misleading, and steam users are, consequently, in many cases deceived. A great deal of inferior iron is being used. Steel plates are generally drilled, but sometimes punched and afterward annealed. The effect of punching on iron and steel is greater on thick than on thin plates. Lap joints of thick plates have a smaller ratio of strength than thin ones. The employment of butt joints is recommended with thick plates. Single-riveted butt joints with double strips are stronger than double-riveted lap joints.

The English Bessemer Steel Industry in 1884.

According to the annual statistical report issued by Mr. J. S. Jeans, secretary of the British Iron Trade Association, the total production of Bessemer steel ingots in Great Britain during 1884 amounted to 1,299,676 tons, against a total production of 1,553,380 tons in 1883. The decrease in 1884 amounted to 253,704 tons, which is the greatest decrease that has occurred in any one year in the history of the trade. In 1883 there was a decrease of 120,269 tons on the make of 1882, so that the total decrease of 1884 on 1882 is not less than 373,973 tons.

The following table shows the quantities of Bessemer steel ingots produced in each district of the United Kingdom in 1882, 1883 and 1884:

District.	1882.	1883.	1884.
South Wales.....	488,086	504,966	387,728
Sheffield.....	420,000	385,763	305,983
Cleveland.....	326,284	304,606	286,704
Lancashire and Staffordshire.....	252,313	247,440	205,127
West Cumberland.....	191,236	210,605	215,134
Totals.....	1,673,649	1,553,380	1,299,676

The production of Bessemer steel rails in the United Kingdom in 1884 was 784,968 tons, against 1,097,174 tons in 1882. There has therefore been a diminished make of 312,206 tons in 1884. Particulars of the make in each district are appended:

District.	1882.	1883.	1884.
South Wales.....	397,544	410,676	307,633
Sheffield.....	310,000	142,562	46,324
Cleveland.....	255,842	245,386	169,530
Lancashire and Staffordshire.....	141,306	125,011	90,585
West Cumberland.....	150,993	173,436	170,964
Totals.....	1,255,785	1,097,174	784,968

The greatest decrease of production has occurred in the Sheffield district, where in 1883 it amounted to 134,237 tons on 1882, and in 1884 to 214,017 tons on the same year. A great part of this diminished make is attributable to the removal of one of the largest works to the West Cumberland district which, in consequence thereof, shows in 1884 an increased production of 23,808 tons on 1882, being, indeed, the only district in which an increase occurs. The total decrease in the make of steel rails on that of 1882 has been: In 1883, 138,611 tons; in 1884, 450,817 tons; total, 589,428 tons. The decreased make of rails is more considerable than that of ingots, the percentage decline on 1883 being 24 per cent. in the case of ingots, and 40 per cent. in that of rails. The make of Bessemer steel ingots in the second half of 1884 shows an increase on

that of the first half, but the make of rails has considerably fallen off. The next statement shows the quantities of different descriptions of finished steel, &c., manufactured in addition to rails, of which returns have been received for 1884. The total of these items is 302,290 tons, but it is not to be assumed that any one of them is complete, as some firms have failed to distinguish one variety of manufactured steel from all the others: Merchant steel, 55,115 tons; plates (including fish plates), 47,793 tons; billets, 46,132 tons; blooms (not including those known to have been rolled into rails at works where they were produced), 126,804 tons; forgings, 4200 tons; castings, 199 tons; tin-plate bars, 10,208 tons; angles, 840 tons; tires, 10,999 tons; total, 302,290

ularly employed. On the contrary, a number of them—perhaps something like one-half—have only been working very irregularly, and the average number of converters at work during the year may be taken to be considerably less than the number specified. For this reason it would be unfair to divide that number into the total tons of ingots produced as a method of measuring the average productive capacity of the converters employed. Such a process would only give an average yield per converter of 15,658 tons, and, as the average annual production per converter in 1883 was 20,991 tons, would be likely to lead to the erroneous conclusion that the average capacity of the steel works of the United Kingdom has been declining. The average actual output per

building yard is at Mandalay, and at Sagine wrought and cast iron were to be manufactured on a large scale, for the plant includes two large blast furnaces, five rolling mills, punching and shearing machines, steam hammers and a foundry. The correspondent gives a graphic picture of the works as they are seen after 10 years' silent inactivity.

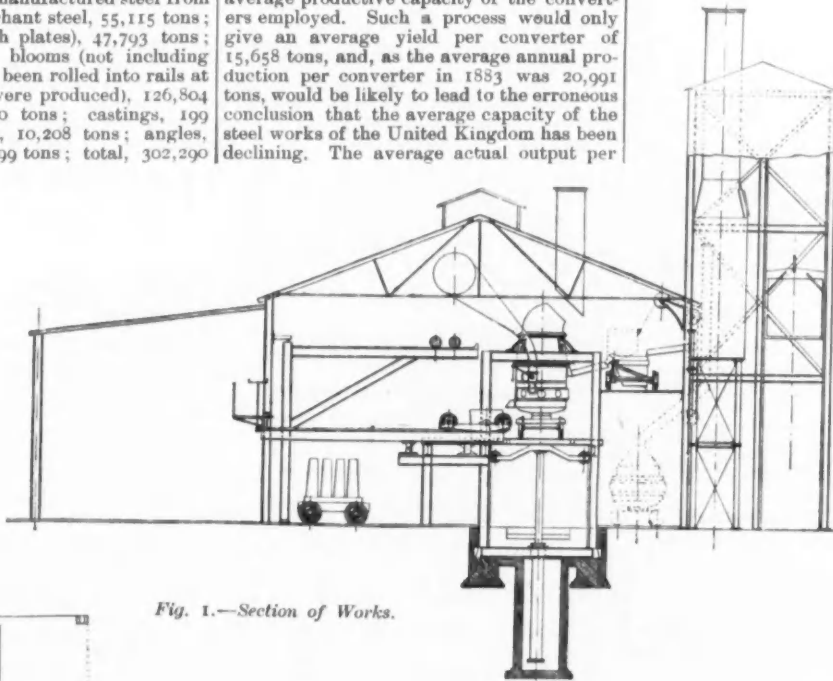


Fig. 1.—Section of Works.

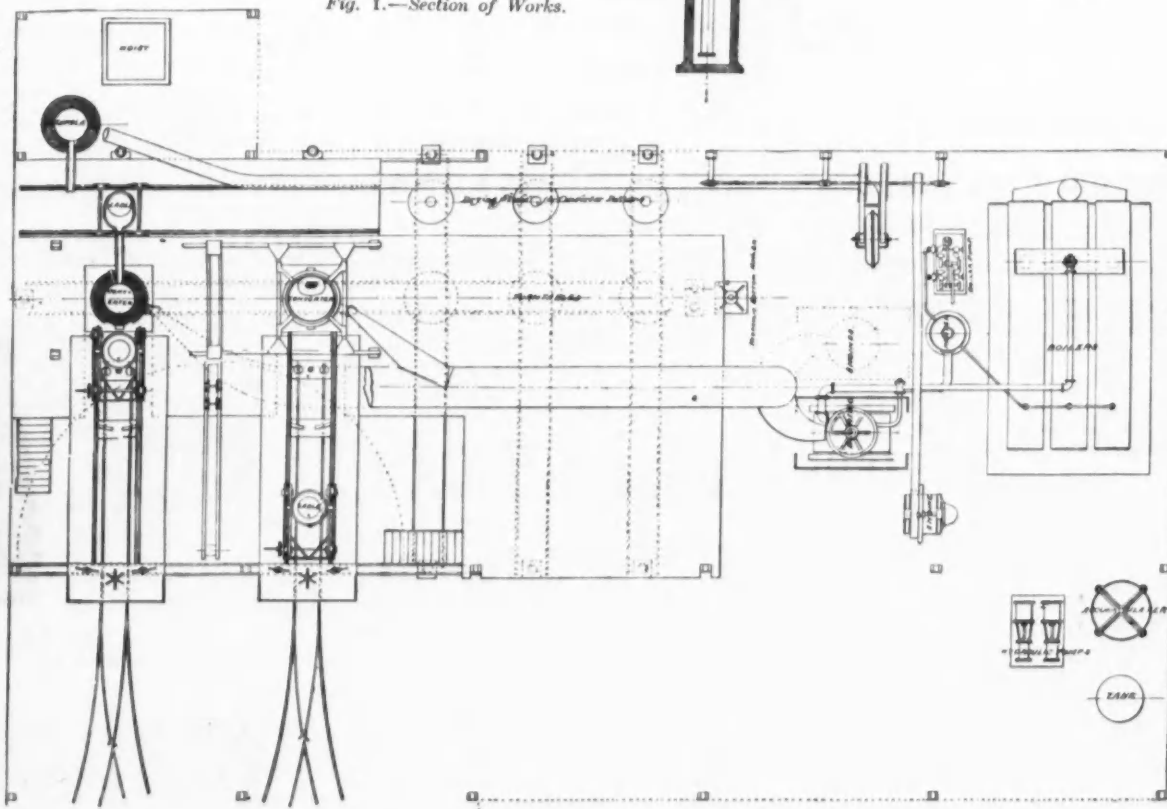


Fig. 2.—Plan of Clapp-Griffiths Steel Works.

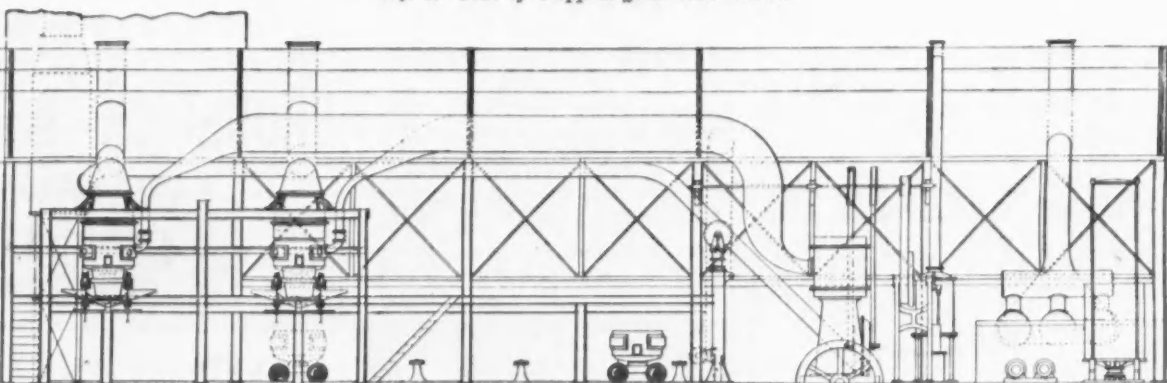


Fig. 3.—Elevation of the Works.

THE NEW CLAPP-GRIFFITHS STEEL PLANT AT PITTSBURGH.

tons. The usual statement showing the position of the converters employed or out of work in 1884 is attached to this year's report. The following is a summary statement of this table:

District.	Working.	Out of work.	Being erected.
Sheffield.....	16	12	0
South Wales.....	19	4	0
North of England.....	18	4	0
West Cumberland.....	11	0	0
Lancashire.....	14	6	0
Staffordshire.....	5	0	0
Scotland.....	0	0	8
Shropshire.....	0	0	2
Totals.....	83	26	8

Although these figures show that 83 converters have been at work during 1884, it is not to be assumed that they have been reg-

converter employed in the United Kingdom during each of the last five years was as under: 1880, 13,125 tons of ingots; 1881, 17,582 tons; 1882, 20,920 tons; 1883, 20,991 tons; 1884, 15,658 tons.

Iron-Making in Burmah.—A correspondent writing from Burmah to the Glasgow Herald gives a very interesting description of the King's iron works, at Sagine, which were erected and nearly completed 10 years since. The works were almost ready to start when the King died, and his successor manifested a strong objection to becoming an ironmaster. He refused not only to advance any money to start the works, but declined to allow any one else to carry on the undertaking. The King's ship-

The steam hammer is overgrown by a lovely crimson creeper, one of the blast furnaces plays flower-pot to a gigantic prickly cactus, and the rolling mills repose in the shade of luxuriant tree ferns. The dry climate has helped to preserve the machinery, which is said to be remarkably free from rust. Any one anxious to become a Burmese ironmaster might, by journeying to Mandalay, get the right side of the King, and secure the concession of the works for a mere nothing, but before embarking in the enterprise it would be well to count the possible cost, for the rulers of Burmah have rather a bloodthirsty reputation, and sometimes decapitate those who submit objectionable proposals. The man who has courage to start new works in the present condition of trade might have courage to try Mandalay.

The New Clapp-Griffiths Steel Plant at Pittsburgh.

Our pages have borne testimony during the past few weeks to the great interest aroused by the results with the experimental plant of two Clapp-Griffiths converters at the works of Messrs. Oliver Brothers & Phillips, at Pittsburgh. Mr. J. P. Withrow, in his paper before the recent meeting of the American Institute of Mining Engineers, gave the history of that earlier plant, which in its details was only a copy of the appliances used in Wales. He and those co-operating with him were quick to reach the conclusion that, while the results with the old plant clearly demonstrated the claims of the process to an important position, it did not come up to the demands of American Bessemer practice in its mechanical arrangements. The fixed converters in the earlier experimental plant were built upon a brick pier, 13 feet in height, the molten pig being fed into them from a cupola behind them by simple runners. After making upward of 2000 tons of steel with the old plant, which had, however, to undergo a number of changes, it was decided to remodel the entire plant. This has been now nearly, if not wholly, completed, and the new works will start up in a few days, if, indeed, they have not already made their first blow by the time these lines reach our readers. We show in the accompanying engravings a plan or elevation and a section of the new works. Its principal characteristic feature is that the fixed converter has been provided with a movable bottom, involving arrangements for drying bottoms and the appliances for handling product. There are two 3-ton converters, the details of which we shall speak of further on. Back of them is a cupola, with a stock hoist, room being left for a second cupola, which will be erected when the plant is to be run up to its full capacity. This cupola discharges its contents into an intermediate weighing ladle (shown in the section and in the plan) which travels along a track parallel to the row of converters. From this ladle the pig is poured into the spouts leading to the respective converters in the manner indicated by dotted lines in the section. The converters themselves are hung in a wrought-iron framework, raising them some distance above the floor line and making the working floor about 10 feet above the general level. The bottoms are handled by means of a carriage. When a bottom is defective the hydraulic hoist shown in the section is run up with the carriage upon it, the bottom is loosened, the blast connection broken and the whole is lowered to the ground floor. The truck supporting the bottom is drawn along the track to the last turn-table by means of a vertical hydraulic cylinder with chain and sheaves. This vertical hydraulic cylinder is shown in the elevation, with the position of the main sheave at its highest point indicated by dotted lines. A new bottom, which has been previously prepared, is then taken from the drying stove nearest the converters, run out upon the turn-table opposite and placed upon the hoist, which is then lifted and the bottom fastened into place, the joints made and operations resumed. It will be observed from the plan that there are three of these drying stoves. The dotted lines on the plan indicate the trucks and the turn-table arrangements upon which the bottoms are conveyed.

In front of each converter will be noticed a peculiar swinging track, arranged for conveniently tapping from the steel ladle into the ingot molds, which stand upon a truck below in nests of four, five or six, as may be desired. The mold truck stands upon a track leading out of the building. The blast for the cupola is furnished by a Sturtevant blower, operated by a small vertical engine placed nearest the hydraulic pumps. A larger engine with 16-inch steam cylinder, 48-inch blowing cylinder and 30-inch stroke furnishes the blast for the converters. Room has been left for a second engine of the same size. The blast is conveyed to the converters in the manner shown. Steam is furnished to the engines and pumps by three boilers, 44 inches in diameter and 26 feet long, with two flues in each. These boilers are fed with a "doctor" boiler pump, the water passing first through a feed heater. The power for the hydraulic lift and bottom truck hauling cylinder is provided by hydraulic pumps and an accumulator.

It is estimated upon the basis of work done with the old plant that this remodeled plant, with two cupolas have a daily capacity of 150 tons of ingots in 24 hours, provided there are sufficient hydraulic cranes and other appliances for handling the ingots. The distinctive feature of the Clapp-Griffiths process is the converter, of which we present two different forms, the first, shown in Figs. 4 and 5, being similar in design and construction to the fixed-bottom converters at the Margrin Works, Wales, and a number of other works in England. It is a counterpart of the ones first erected at the works of Messrs. Oliver Bros. & Phillips, Pittsburgh. A is the main wind-pipe carrying blast for the tuyeres, and controlled by a large valve. B is a subsidiary pipe carrying the same pressure of blast, leading into the chamber G containing a differential piston. C is the charging hole; D the cinder notch or slag tap,

(Continued on page 15.)

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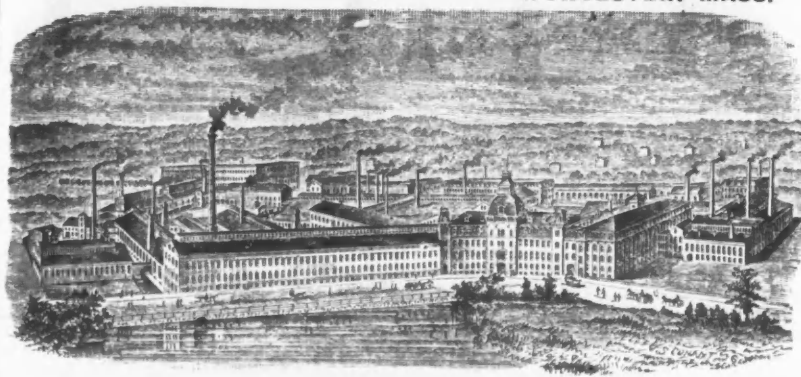


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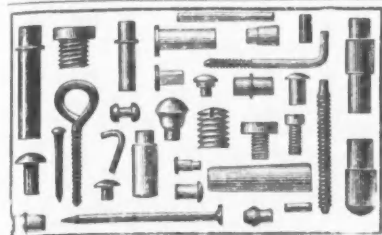


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Liability of Principal for Agent's Acts.

The Supreme Court has decided the case of Bradlee & Co. vs. Whitney & Kemmerer, Justice Clark filing the opinion. The case involves a question which is constantly arising in transactions where an agent or broker is dealt with, and the point passed upon by the court is as to the effect of a payment to a supposed agent who afterward absconds, and, further, what is the liability of the firm after paying a broker for goods to pay the money over again to the principal because of the dishonesty of the agent? The parties in the action agreed that the case should be submitted to a referee. The findings of this referee as to the matters of fact are final, and are so treated by the Supreme Court.

The facts were as follows: Whitney & Kemmerer were anthracite coal merchants and Bradlee & Co. were manufacturers of chain and iron goods at Gunner's Run. In October, 1879, A. J. Cohen, a coal broker in Philadelphia, obtained from Bradlee & Co. an order for a boatload of coal. This order he asked Whitney & Kemmerer to fill for him. The latter firm knew that Cohen was insolvent, and therefore agreed to sell to any of his customers who, upon inquiry, were found to be satisfactory; to bill and ship the coal to them directly, and to pay Cohen a commission on sales when the bills were paid. In accordance with this arrangement they consigned to Bradlee & Co. a boatload of coal weighing 97 tons. The purchasers gave a receipt for the coal on the back of the bill of lading. The consignment was in the name of Whitney & Kemmerer, and not in that of Cohen. About a month afterward Cohen called for and received from Bradlee & Co. the price of the coal, giving his receipt therefor, and shortly afterward absconded. The referee found as a fact that Whitney & Kemmerer never in any way nor at any time gave Cohen authority to act as their agent, and that Bradlee & Co. assumed him to be acting in that capacity without inquiry. He therefore held them liable to pay to Whitney & Kemmerer the amount due on the coal.

In affirming the decision of the referee Justice Clark says it is true, as a general rule, that where there is no knowledge or notice that property involved belongs to another, the rights of the purchaser will be respected. In this case, however, the transaction exhibited upon its face what would put an ordinarily prudent purchaser on inquiry. The manner in which Cohen was doing business was suggestive of the fact that he was not acting on his own account. Beyond all question Bradlee & Co. acted in perfect good faith, but the exercise of a reasonable degree of prudence would have prevented their paying the money to Cohen. The judgment is therefore affirmed.

Charcoal Burning in Kilns at Boxholm, Sweden.

At Boxholm, in Sweden, kilns have been introduced for the purpose of carbonizing sawmill waste for iron works. W. Sandahl, who describes them in the *Jern Kontoret's Annaler*, states that they are rectangular chambers, 30 feet long, 20 feet broad at the bottom, 18 1/2 feet at the spring of the semi-circular roof, and 19 feet high to the top of the latter. The side walls, 11 1/2 feet high, are made with a slight inward fall. The floor is flat, except at the end walls, where it is laid with a small slope toward a cast-iron pipe, giving issue to the gases and condensable products. The former escape by an upright pipe made of sheet brass, while the latter are collected in a wooden cistern, forming a tar well. A rectangular fireplace, lined with fire-brick, extends under the center of the floor for about half its breadth, where it is connected with five narrow flues, branching out to the four corners and the center of the opposite long side, through which air is admitted to the chamber. The necks of these flues are covered by iron pipes with low, conical cowls projecting about 9 inches above the floor level. The arch is protected against rain by a light wooden roof. The sawmill waste ribs and slabs are brought to the kilns by railroad, and stacked to dry in the air until wanted. The charging is effected through doors, of which there are two, at each end of the kiln. One of these, at the floor level, is 5 x 4 feet, while the other, at the level of the arch springing, is only 1 1/2 x 2 1/2 feet. A bed of logs or large ribs is laid across the kiln to a depth of about 9 inches, in order to facilitate the firing of the wood, and upon this the remainder of the charge is laid, with the length of the wood in line with the longer sides of the kilns. Experiments made with alternate layers, laid crosswise, gave no better results, while the charging was somewhat more expensive.

When the whole quantity of wood, about 10,000 cubic feet, has been charged, which can be done by 10 men in three or four days, the lower doors are closed and bolted, and fire is applied through the central flues. The upper doors are left open until the third day, to give free vent for the steam given off from the damp wood. This is succeeded by gas, at first white, and then becoming darker and more abundant until the middle of the sixth day of burning, when it mostly changes to blue. The burning is controlled by the character of the gas; if the fire takes too strong a hold, the flues are damped or plugged with wood to check it. To provide for the relief of internal gas pressure upon the structure in the latter case, the side walls are perforated with three small tubes about 18 inches above the floor, which are kept constantly open. According to the degree of dryness of the wood, the burning lasts from 10 to 18 days, the cooling takes 16 days and the discharging is effected in 1 1/2 days by two men. When the boiler is emptied, any repairs that may be required are made, when the next charge is immediately introduced. The coaling is done by piecework. The total cost for labor is about 1/4 per last (76 cubic feet) of charcoal produced. The annual production of each kiln is 800 lasts of coal and 160 gallons of tar. The loss in carbonizing varies with the dryness of the wood, but may be taken as averaging 1000 feet upon the total contents of 10,000 feet, the volume of the coal obtained being from 85 to 90 lasts, or from

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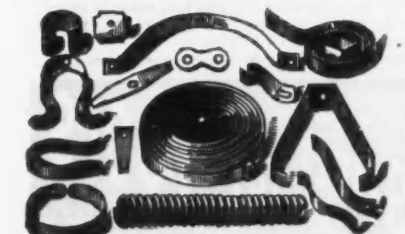
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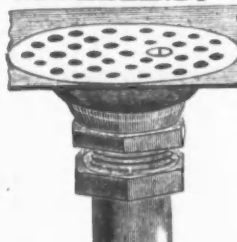
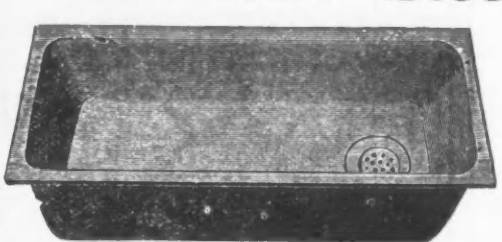
FIG. 120.



FIG. 200.



FIG. 70.

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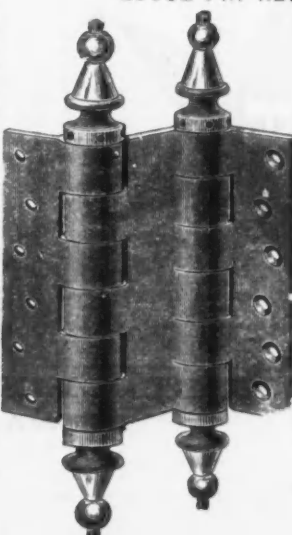
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6460 to 6840 cubic feet, representing a yield of from 58 to 62 per cent. in volume of the wood used. When the ground occupied by the kilns was used as an open coaling place, from two to three piles of 75 lasts could be burned annually, with a cost for labor of 2/5 per last, with a yield of 50 per cent. upon the volume of the wood burned. The coal produced from sawed stuff is less adapted for blast furnaces than for Lancashire forge fires, for which it is well suited when mixed with a proportion of charcoal from natural wood. As compared with open heaps, kilns have the following advantages: 1. Lower working cost. 2. Better yield, the charcoal being cleaner and freer from dust. 3. The carbonization is more easily conducted, not being dependent upon the weather, and also requiring less skilled labor.

Steel-Tired Wheels.

A number of papers on the question whether the facts in relation to the safety and economy of the steel-tired wheels for engines and cars warrant its universal adoption were discussed at the last meeting of the New England Railroad Club.

Mr. H. A. Little read a paper contributed by Mr. W. R. Ellis, an abstract of which follows: The fact seems generally admitted that there is a demand for a steel-tired engine and car wheel. This is proved by the fact that over 100,000 are now on trial in the United States. This demand is general. In this, unquestionably, the railways are in the first place looking for absolute safety, which seems to be attainable, judging from the records of other countries where steel-tired wheels are almost universally used. This being the chief cause of the demand, it is evident that no form of wheel should be adopted which does not make safety certain, or at least reduce the liability to accident. If a steel-tired wheel of 33 inches diameter, with tire 2 1/2 inches thick, costing \$50 or more, does not increase safety, it is difficult to see what other advantages can make it economical. We are as yet in the experimental stages of this question, as shown by the fact that, apparently, the question as to what steel tires can do as compared with the chilled tread of cast-iron wheels is considered of the most importance. That question concerns the tire-makers. Makers of cast-iron wheels now sell their wheels on a mileage basis. The tire-makers should do the same, or at all events should make clear as soon as possible what steel tires under the different conditions can or ought to do. There are only a few makers of tires, but more than a dozen steel-tired wheels are now prominent, and new patterns are being devised every day. Only one or two wheel-makers make their tires, and, speaking generally, they can use any which may be specified. Records of wheel service are not yet satisfactory or conclusive, and are only beginning to be properly examined and analyzed. No records of engine-wheel service are produced, and the records of car-wheels are kept uniformly on only one or two lines, and the same records frequently cover several makes of steel, by each of three processes, all on the same pattern of wheels. What is of most importance to wheel-makers, who can use any steel which may be required, is to have all the points bearing on the entire wheel brought forward as soon as possible. Here we have a wheel guaranteed to run 400,000 or 500,000 miles, costing \$30, and another guaranteed to do the same, costing \$90, and it is a tire presumably of the same thickness in each case which is doing the work. What makes the enormous difference in cost? It cannot be the tire, but is in the design of the wheel itself, and as the steel-tired wheel is undoubtedly to be a permanent element of railroad equipment (the sales increasing in spite of the ignorance as to what is wanted of them or what they can do), and as all can do the same work, so far as tires are concerned, what we want to know is, What is there in a steel-tired wheel, or what is required of one besides mere mileage service, and what are these other properties worth?

Dr. H. O. Marcy, of the Allston Car Wheel Company, gave an account of his company's process and Mr. Nathan Washburn's connection therewith. In 1849 Mr. Washburn patented the double-plate chilled-iron car-wheel, which made a revolution in the manufacture of wheels. Several millions of profit accrued to the holders of the patent, and this same method of making iron car-wheels is yet in use. Mr. Washburn was himself, however, never satisfied with the result, and has expended over \$250,000 of his own money and a quarter of a century in the experimental study of steel and the making of car-wheels. Mr. Zadock Washburn, the present foreman of the Allston Car Wheel Company, was the inventor of the process of uniting the tire to the soft iron center by intense fusion of the two metals. The tire of hammered and rolled steel is reheated until it is at or above the fusing point of cast-iron—about 3000° F.—then transferred to a mold in which the soft center is cast. By this means the two metals become one and inseparable. The report of the wear of these wheels made here to-night by Mr. Adams will show many wheels with a remarkable record of mileage. They offer certain marked advantages—notably, the wheel is of one piece, and, as may be seen, the tire can be worn much longer than when bolted to the center. Mr. Washburn, however, became satisfied after some years' experience that owing to the reheating the uniformity of the metal was often impaired and the product rendered thereby doubtful. This led to the belief that a tire could be cast and joined to a soft center by a similar method of manufacture. The fusion point of crucible steel is about 4000° F., and this allows the casting of a steel tire and its removal to another mold before it has cooled to the point of fusion of cast iron. Thus the two metals in the Washburn or Hartford wheel are inseparable and the wheel is one casting. The hardness of the steel was effected by making it of a high grade of carbon. (2 per cent.) The Allston Car Wheel Company have made about 10,000 of these wheels, which are running on all the roads in New England. Dr. Marcy then detailed the favorable experience on various lines, which did not, however, include definite figures, and the further experiments which his company were making in the direction of manganese steel.

Mr. J. M. Ford stated that a crucible steel tire of the best quality has a tensile strength of 120,000 pounds per square inch, and has, properly carbonized, a durability in service the economic value of which is now beyond question. The materials comprising this metal resist the severest application of the forces which operate to flatten ordinary wheels, and this feature alone results in materially prolonging their life and service. Practical service to date results in an average mileage for 33-inch wheels of about 280,000 miles in passenger service, and this is sufficient to warrant the claim of economy in service. Many of the wheels, however, have been turned into freight service, and will give from 50,000 to 75,000 miles more.

An open-hearth steel tire has a tensile strength of 80,000 pounds to the square inch, or 33 1/3 per cent. less than the crucible-steel tire, and has a durability in service even less than in proportion to its strength, from the fact that its quality of metal is not of a sufficiently durable character to resist the application of the powerful automatic brake. These wheels would perhaps make a better showing where the conditions demand less severity of service. Of the cast-iron wheel the tensile strength is a doubtful quantity, perhaps from 18,000 to 30,000 pounds to the square inch, according to quality, or from 75 to 85 per cent. less than the crucible-steel tire. Out of 241 wheels removed from passenger service on through trains, but 51 were reported as worn out, or about 21 per cent., 79 per cent. being reported as shelled out, flattened, broken, &c. Out of 640 removed from freight service, but 91 were reported as worn out, or about 14 per cent.; 277 worn flat, or about 43 per cent.; 67 slid flat, or about 10 per cent.; 163 broken, or about 25 per cent.; the balance were removed for cut flanges, &c. These facts alone ought to decide the question in favor of the steel-tired wheel; but, lest they should fail, Mr. Ford submits a few other facts. The last reliable record of the average mileage of the 33-inch cast-iron wheel was 29,074 miles, recorded in 1882. From this it appears that the steel-tired wheel will outlast nearly 10 chilled wheels.

The total cost of one pair of steel-tired wheels, with interest and cost of changing and turning, to run 285,504 miles has been less scrap wheels \$165.31
The total cost to run the same number of miles with the cast-iron wheels, with interest and cost of changing, has been, less scrap wheels 215.39
Difference in favor of the steel-tired wheel. 50.08

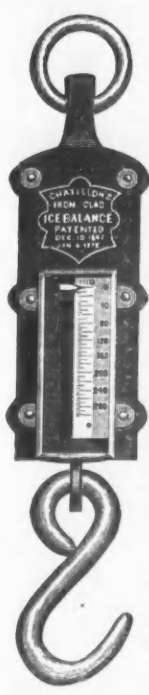
If records were obliterated, it might be safe to assert that cast-iron wheels, in point of economy, were equal or superior to steel-tired wheels for heavy and rapid traffic. It is said that the cast-iron wheel is guaranteed for 60,000 miles, and the guarantee is assumed to warrant this result. This, Mr. Ford declares, is an enormous assumption.

A New Fuel.

An experiment, as carried on by the contractors for the North Bridge, Scotland, at their works near South Queensferry, to determine whether crude shale oil can be advantageously employed as a substitute for coal in feeding boiler furnaces, possesses no slight interest, for, should the new material fulfill the expectations of its introducers, the method cannot fail to be exclusively adopted in the numberless manufacturing arts where a heating agent combining efficiency and economy with cleanliness is a desideratum. The general principles of the method adopted and the apparatus employed will be readily understood when it is borne in mind that the process depends on the perfect combustion of crude shale oil, vaporized in connection with superheated steam and atmospheric air. The apparatus consists mainly of a cylindrical cast-iron retort, around which two pipes are coiled spirally, one externally, the other internally, meeting each other in a burner beneath the retort. Through the external pipe oil is forced by hydraulic pressure; through the internal pipe water is similarly driven. To start the apparatus the retort must first be heated, which may be readily effected by a small coal fire. The water-valve is then slightly opened, and the water, after traversing the pipe coiled internally around the retort, issues at the burner beneath—a powerful jet of superheated steam. The oil is then similarly admitted through its pipe—namely, that coiled externally around the retort—and, being vaporized, or nearly so, by the heat, reaches the burner below. Here it is caught by the superheated steam and hurled against the convex bottom of the retort, the force of the impact breaking up into finely-divided vapor any portion of the oil which the heat may not have already converted into gas. In a short time the retort and tubes become red hot, chemical action is set up, and perfect combustion of the steam, the carbon from the oil, and atmospheric air drawn in by the partial vacuum formed, ensues. The perfect combustion and intense heat generated consumes all the products, and leaves little or no residue requiring removal. The absence of ashes or other refuse, necessitating constant attendance and cleaning, and the almost entire exemption from smoke, due to the completeness of combustion, are among the advantages claimed by the inventors of the apparatus.

The report of the New York fire Commissioners for the quarter and the year ended December 31 last, covering 147 pages, has been transmitted to the mayor. Exclusive of the three fire commissioners, there were 1155 men on the rolls of the department on December 31. Of the officers and members in active service, 114 have been on the uniformed force since 1865, and 110 date their connection with the department from last year. Two new engine companies were organized during the year, and four others reorganized as double companies, besides one hook-and-ladder company. During the year the aggregate number of alarms responded to by all the companies was 9728, an average of 139 for each company. The total appropriations for the department during the year were \$1,686,129.20 and the expenditures \$1,679,881.15, leaving a balance of \$6248.05. Sixty-nine unnecessary alarms were sent out, 139 alarms upon indications of fire, and 2406 genuine alarms. The largest number of fires in one month occurred in January and the least in August.

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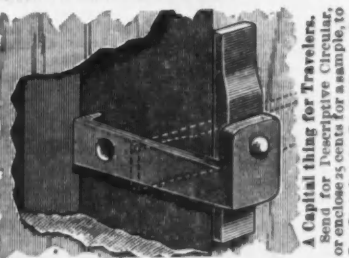


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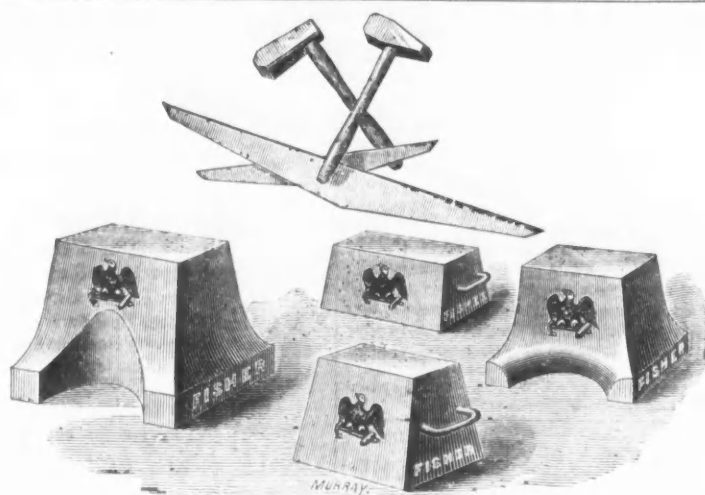
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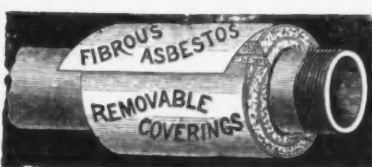
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PATENT SPOOL WIRE FOR THE RETAIL HARDWARE TRADE.

Dealers who handle it do away with the **Broken Bundle Business** and sell small quanti-
 ties by the spool only. It is a convenience for both dealer and consumer. It is **shellac-Coated**
 and cannot rust; is wound
 like spool cotton, on **Quarter**
Pound, Half Pound and
One Pound Spools, one
 dozen spools in a box.
 Our spooled **Hair Wire** is
 the best in the market.

FOR SALE TO THE TRADE BY

MALIN & CO.,
CLEVELAND, O.,

AND BY

Hardware Jobbers Everywhere.

SEND FOR ILLUSTRATED PRICE LIST.

SPECIAL WIRES FOR MANUFACTURING PURPOSES ON ANY SIZE OF SPOOL.
JOHN WALES & CO., 239 and 241 Franklin St. **BOSTON, MASS.**
 Eastern Agents.

Manufacturers and the Trade are warned not to infringe on our patent, No. 294,740, either by manufacturing
 or selling.



Exact Size of Quarter-Pound Spool.

Seven hundred and sixty-nine fires resulted
 in damage of less than \$10 each. More
 fires broke out on Saturday than on any
 other day, and less on Thursday. More
 were discovered between 6 and 7 o'clock in
 the evening than at any other hour, and
 less between 5 and 6 o'clock in the morning.
 Thirteen fires during the year resulted in a
 loss of over \$50,000 each, the most costly
 fire being that of the East-street warehouse,
 on January 14, which broke out at 7:24
 o'clock in the morning, and lasted seven
 hours, resulting in a loss of \$225,542. As
 nearly as can be estimated, 44,093,600 gal-
 lons of water were used by the land engines,
 and 9,531,300 by the two floating engines.
 Fifty persons were rescued by the unformed
 force. One member of the department was
 killed, and seven other persons lost their
 lives. The estimated loss from fires during
 the year was \$3,474,547, or an average loss
 of \$144.12 per fire. The estimated insur-
 ance was \$26,126,839. The total loss by
 fires for the past 19 years was \$69,047,308.
 More fires occurred last year from smoking
 of cigars, pipes, &c., than from any other
 cause, and more from illuminating than from
 heating.

TRADE PUBLICATIONS.

Duncannon Iron Company.

The Duncannon Iron Company, 122 and 124
 Race street, Philadelphia, manufacturers of
 nails, spikes, bar iron, forge and foundry
 pig, have issued a price list and schedule of
 extras, which contains a good deal of infor-
 mation like the weight of different sizes of
 nails per pound, the number of railroad
 spikes in 100 pounds, of splices and bolts per
 mile of track, the number of feet of hoop and
 scroll iron in a bundle of 56 pounds, the
 weight of round, square and flat bar iron
 per running foot, the weight of tire iron
 per set of 54 feet, the number of feet of
 round and square iron in a bundle of 112
 pounds, the weight of galvanized sheet iron
 in pounds per square foot, the weights of
 iron, steel, copper and brass wire in pounds
 per 100 feet by numbers of Birmingham wire
 gauge, the weight of wrought iron welded
 tubes per running foot, and the tables com-
 puted by Mr. W. E. S. Baker, secretary of
 the Duncannon Iron Company, for the Iron
 and Steel Association, giving the wholesale
 store prices of cut nails at Philadelphia from
 1864 to 1884, and of wholesale store prices of
 best refined rolled bar iron in Philadelphia
 from 1844 to 1884.

The Southwark Foundry and Machine Company.

The recently-issued catalogue of the South-
 wark Foundry and Machine Company, of
 Philadelphia, Pa., is in every respect a most
 attractive specimen of trade literature. It is
 104 by 13 1/2 inches in size, and embraces 60
 pages, fully illustrated, and supplying brief
 descriptions of the machinery built by them.
 In addition to the well-known Porter-Allen
 engine, the catalogue contains engravings
 and particulars of the Clerk gas engine, the
 Southwark steam pumps, hydraulic passen-
 ger elevators, hydraulic presses, blowing
 engines and sugar machinery. The concluding
 pages are devoted to instructions to cor-
 respondents and interesting tables of mean
 effective pressures for different points of
 cut-off and of indicated horse-power con-
 stants.

The Horton Chuck.

The E. Horton & Son Company, of Windsor
 Locks, Conn., have sent us their catalogue
 of lathe chucks, which is fully illustrated
 and contains detailed descriptions of the dif-
 ferent types shown. It embraces 38 pages,
 and, for those interested in this line of ap-
 piances, will be found a convenient guide
 for reference.

Elevating and Conveying Machinery.

The Lechner Manufacturing Company, of
 Columbus, Ohio, have issued a 20-page pam-
 phlet devoted to the interests of their ele-
 vating and conveying machinery. It is pro-
 fusely illustrated, and its descriptions, price
 lists, &c., will no doubt prove a source of
 welcome information to many.

Stone and Wood Working Machinery.

The Lincoln Iron Works, of Rutland, Vt.,
 have sent us their catalogue devoted to wood
 and stone working machinery, in which they
 call attention to their special facilities for
 building and equipping mills. The catalogue
 is attractive in every respect, the numerous
 cuts being well executed and the reading
 matter conveniently arranged. Among the
 machinery shown we find the Merriman
 stone planer, a stone-jointing machine, the
 "Little Giant" dovetail machine, the
 "Eclipse" rock drill, the Ingersoll channel-
 ling and gadding machines and others.

The Fishkill Corliss Engine.

One of the most attractive catalogues
 which has come to us in the new year is that
 just issued by the Fishkill Landing Machine
 Company, of Fishkill-on-the-Hudson, N. Y.,
 in which they give full descriptions of their
 Corliss and slide-valve engines. It is pro-
 fusely illustrated, and, aside from the de-
 scriptive matter, contains some interesting
 particulars concerning fly-wheel pulleys,
 driving belts, the power of belts and con-
 densers.

Drills.

Messrs. George Burnham & Co., of Wor-
 cester, Mass., have issued a catalogue an-
 nouncing that they have increased the
 capacity of their tools during the past season,
 and are now prepared to furnish self-feeding
 drills of superior workmanship. The cata-
 logue gives three different views of their
 upright drill, and readily enables the reader
 to understand its arrangement and func-
 tions.

The Largest Emerald in the World.—
 An emerald weighing 1 pound has been
 found in the celebrated Muzo Emerald Mines,
 in the State of Boyaca, United States of Co-
 lombia. The largest specimen of the gem
 heretofore known to lapidaries is in the col-
 lection of the Duke of Devonshire, and
 weighs between 8 and 9 ounces. It came
 from a mine in the same neighborhood.

Ancient Civilizations of America.

Prof. J. S. Newberry, of Columbia Col-
 lege, recently delivered, by invitation of the
 Xavier Union, at their rooms in Twenty-
 seventh street, New York, an interesting lec-
 ture on "Ancient Civilizations of America,"
 illustrated by views showing the implements
 and weapons found by explorers among the
 remains of the so-called Mound Builders of
 the Ohio and Mississippi valleys and the
 ancient inhabitants of the Lake region, as
 well as the Central and South American
 monuments of an early and highly developed
 civilization.

The white settlers found on the North
 American continent, the speaker said, only
 the nomad, restless and warlike Indians,
 and somewhat hastily concluded that these
 were the aboriginal inhabitants, and it was
 not until a comparatively recent period that
 this idea had been exploded. As the Indian
 was driven back and the primeval forests
 cleared, evidences were found beneath this
 vast growth that a race, semi-civilized at
 least, had occupied a large part of the north-
 ern and western territory of the United
 States, and that this people must have been
 of a different race from the Indian, and
 must have disappeared at least 1000 years
 before the advent of the white man. Of the
 many tribes of Indians with which the
 speaker in his wanderings as a geologist had
 become familiar, not one, if we except the
 peaceful Pueblos, had any of the character-
 istics of the Mound Builders as we have
 them in their remains scattered so plenti-
 fully through the Ohio and Mississippi val-
 leys. The ancient were a peaceful, agricul-
 tural people, as all the evidences prove, and
 could have had nothing in common with the
 restless, crafty, shiftless, combative race of
 to-day. They must have disappeared
 many centuries before America was known
 to Europe is proved by the fact that all that
 remains of their life and work has been
 found under full grown forests, and these
 upon a preceding forest growth. The copper
 mines of Lake Superior were worked by a
 race whose implements were formed of
 native copper, hammered to shape. There is
 no evidence that they had any knowledge of
 metallurgy, but that this ancient race was
 in part civilized there could be no question.

Referring to South and Central America,
 the speaker said the Spaniards found a
 highly-civilized race, excelling in many of
 the arts, and some of whose works as we
 find them to-day would prove difficult of
 execution by the moderns. Though the ac-
 counts of this people that have come down
 to us are perhaps somewhat exaggerated, the
 speaker could not agree with the skeptics,
 who, going to the other extreme, pro-
 nounced them fables. The accounts were
 too circumstantial and from too many
 sources to leave room for doubt, and we
 must accept, perhaps with some allowance,
 the wonderful stories told by traveler, priest
 and soldier. This ancient people excelled in
 masonry and carving; their masonry was
 built without mortar, and the fitting of the
 stones was so perfect that it would be diffi-
 cult to insert the point of a knife between
 the joints, while their carving was not only
 beautiful in design, but showed much skill
 in execution. Their roads and bridges were
 built in a manner to command the admira-
 tion of engineers, and beside some of their
 works the building of the Pacific railroads
 was a mere scratching of the surface. They
 were undoubtedly a rich and prosperous
 people; their temples and palaces were
 marvels of construction and ornamentation,
 and the precious metals were profusely used
 in their adornment.

As to the origin of this Incarial civilization
 there were many theories, all speculative, and
 it was doubtful whether the question would
 ever be cleared up. The speaker's own theory
 was that the Incas had affinity with the peo-
 ples of the South Pacific. There is a striking
 similarity in the carvings to be found both in
 wood and stone in many of the South Sea is-
 lands and the remains found in South Amer-
 ica. One peculiarity of these carvings was the
 tendency to use the human face grotesquely in
 every conceivable position, and the lecturer
 exhibited several views to illustrate this point.

Views of the cliff dwellings were shown,
 and the speaker said they were evidently
 the abode of a people striving to preserve
 themselves from annihilation, who had
 chosen this method of escape from their
 pursuers. Many of these dwellings were
 almost inaccessible; some were 500 feet high
 in the face of the cliff, and must have been
 reached with great difficulty and danger.
 The peaceful Pueblos were described and
 their peculiar dwellings illustrated. These
 Indians differed entirely from the other
 tribes. Indeed, were it not for the color of
 their skin, which was red, though a darker
 red, they might be considered a different
 race. Many were Christians; they wove
 their own cloth, and their clothing was both
 picturesque and useful. The exterior of their
 dwellings differed greatly, but the interiors
 were much like our own.

Although there was considerable literature
 on the subject of the ancient races of this
 hemisphere, there was no compendious,
 authoritative summing up of all the evi-
 dence, and until this was done by a com-
 petent hand there would be much doubt and
 uncertainty.

A Dangerous Practice.—When a boiler
 has undergone repair it is a usual and very
 necessary practice to test it, not only to
 show the quality of the repairs, but also to
 find any other defects or weak parts which
 may have escaped notice. To test a boiler
 in such a case means to fill it with water
 and to apply pressure, "somehow," as
 it is often said, and, as the feed connec-
 tions are often severed at these times,
 it of course means something else than the
 engine pump being used. To send to a
 boiler shop for a test pump is in many cases
 considered too expensive, and the practice of
 filling the boiler with cold water, touching
 up any leaks, and then opening the junction-
 valve from the next boiler and applying
 pressure by turning steam upon the top of
 the water, is consequently adopted. A
 severer test for repairs can scarcely be
 imagined, the strains produced being con-
 siderably greater than under any possible
 working condition, and the repair work due
 to testing is frequently longer in hand than
 that before testing.

INFRINGEMENT OF JOHN WILSON'S TRADE MARK, MASSACHUSETTS, U.S.A.

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BUTCHERS' STEELS,
and
SHOE KNIVES.
TRADE MARK



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AUSTRALIAN & OTHER
BRITISH COLONIES, &
GERMANY.

ACKNOWLEDGMENT AND AGREEMENT.
WHEREAS, I, GEORGE A. ROBINSON, of West Mansfield, County of Bristol, State of Massachusetts, have heretofore manufactured and sold certain Knives bearing a Mark which is claimed to be an imitation of the trade-mark owned by John Wilson, of Sheffield, England, which consists of four peppercorns and a diamond, under the mistaken belief that I had the right to do so.
NOW, This, in testimony whereof, in consideration of the forbearance of the Representatives of the said John Wilson to sue me for damages for the wrong aforesaid, I do hereby undertake and agree,
FIRST, to surrender and deliver to the Attorneys for the said John Wilson, all knives now on hand, and in my possession, or under my control, bearing the said imitation trade-mark, and
SECOND, I further undertake and agree to and with the said John Wilson, and his legal representatives, not to manufacture or sell, or cause to be manufactured or sold, at any time in the future, Knives or other Cutlery, bearing his trade-mark aforesaid, or any imitation or simulation thereof. IN WITNESS WHEREOF, I have hereunto set my hand and seal at West Mansfield, aforesaid, this thirty-first day of May, 1885.

WITNESSES:
E. M. REED,
(Attorney for Defendant.)

G. A. ROBINSON L.S.
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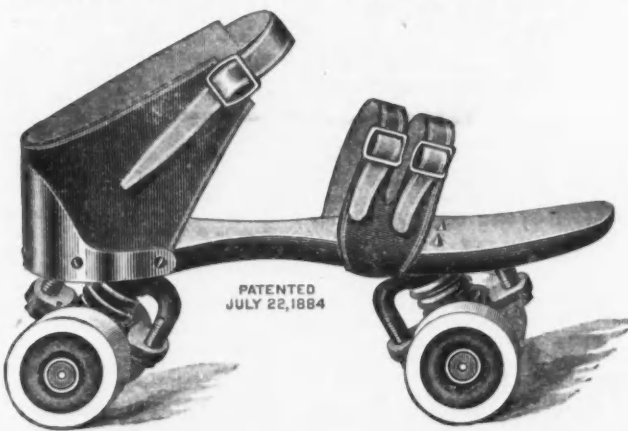
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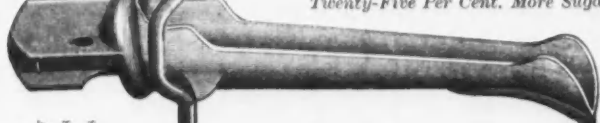
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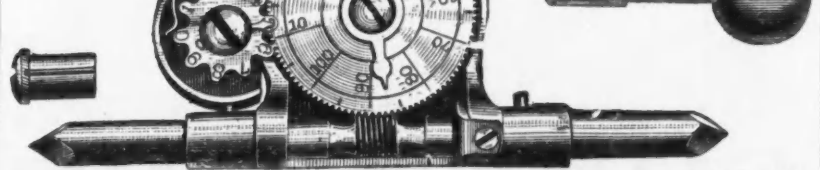
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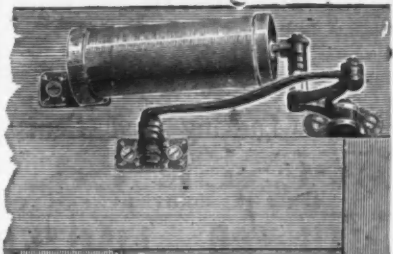


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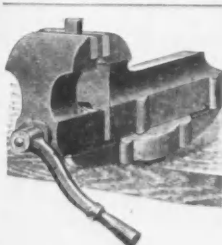
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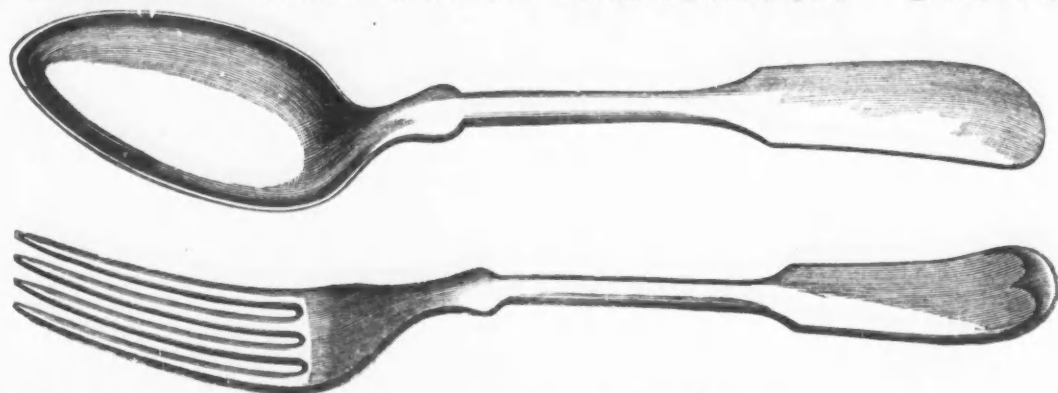
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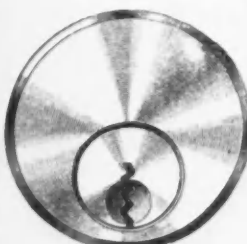
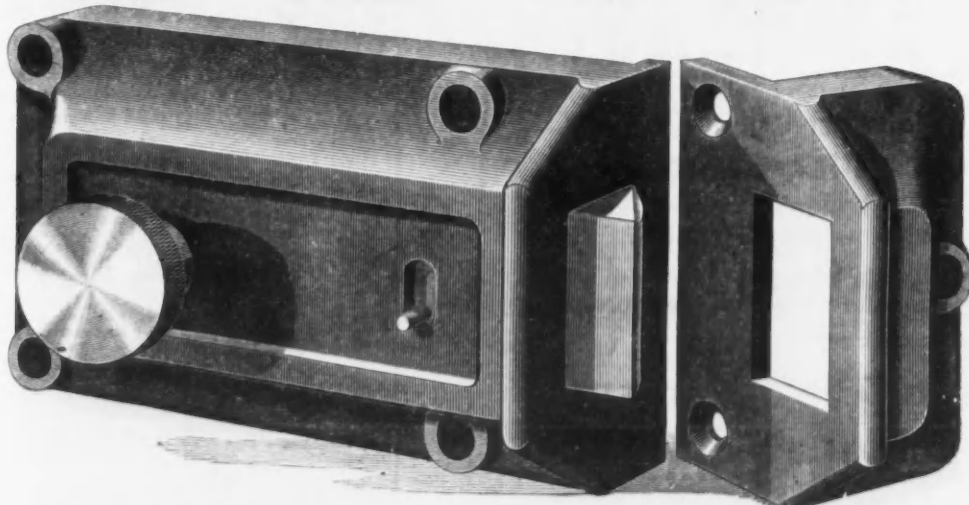
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A Sardinian Manganese Deposit.

Mr. Edward Halse has described in English newspapers the manganese deposit of the Islet of San Pietro, to the southwest of Sardinia. San Pietro has an excellent harbor—Carlo Forte—on its eastern coast, 6 miles from Porto Scuso, on the southwestern Sardinian coast. There is a small, private mineral railroad line about 15 miles long leading from the port, by which the whole of the lead and zinc ores are brought to the port, from whence they are shipped to England or other places on the Continent. The manganese mine is on the western coast and consists of two concessions—Capo Rosso and Capo Becco—and of two "permissions of research," the whole covering nearly 2000 acres. The seam of manganese ore is of an average thickness of 1 foot, lying on a bed of soft whitish clay, containing fragments of trachyte, and forming the floor of the deposit; above it is some 4 feet 6 inches of jasper, above which again comes trachyte of various colors and qualities. Of the jasper, which seems to be found in considerable quantities, Jervis says that which lies around Carlo Forte is most exquisite, and for hardness, coloring and vivacity of tint it is eminently adapted for building purposes. The percentage of manganese in the best portions of the mine will be from 31 to 35 per cent., and the ore will contain from 7 to 13 per cent. of iron. The second quality will contain about 20 per cent. of manganese and about 14 per cent. of iron. In the more manganeseiferous portions of the ore there is a considerable quantity of free silica, which must render this portion of the bed to a great extent inadaptable to the manufacture of ferromanganese. Manganese being scattered through the tufa, its presence as a crystalline peroxide in fissures in the trachyte is accounted for.

The mode of working is to drive cross-cuts from the gallery in the direction of the strike; a rise is then put up from this cross level through the bed; small beds, 4 feet to 4 1/2 feet high and kept open by good timber at the sides and top, are next driven toward the rise of the bed. The men first hole into the soft clay floor with a somewhat curved pick having a hammer head prolonged some inches beyond the handle. The clay, which they constantly throw behind them, forms the goaf with which the old workings are filled up. The manganese is afterward brought down by sledge hammer and long thick wedges. The ventilation is somewhat sluggish and the temperature abnormally high, and, although the mine is above sea level, the men work bare to the waist, even in winter. There is a large portion of water (20 per cent. and upward) in some of the qualities as sent to market, which shows that some means of drying it should be adopted at the mine.

A good round sum has been spent in attempting to solidify the ore by forming it into bricks, but as yet no satisfactory result has been obtained. The mine is cheap to work, or else it would have been useless to go on with any show of success, when so often, too, the bed contains on an average only 30 per cent. of manganese.

The Tunnel Under the Mersey.

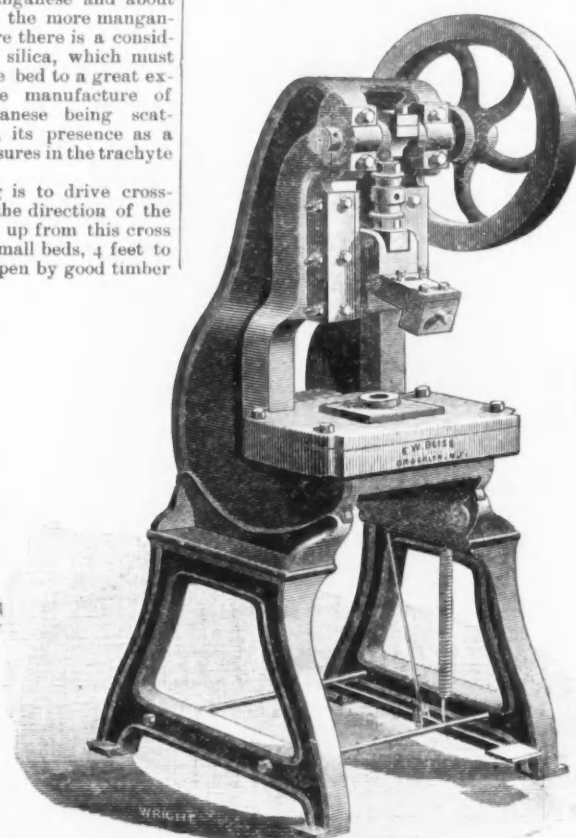
The inspection of the Mersey Tunnel by a large number of shareholders and directors was a matter of great interest on the 13th of January at Liverpool and Birkenhead. The first act for such an undertaking was obtained in 1860, and several additional powers were subsequently applied for and obtained, but it was not until 1880 that the real operations for the tunnel were undertaken. Since then the work has progressed with energy, the solid, red sandstone rock forming an admirable material to work upon. Perfectly able to support itself and to endure the operations of blasting, the tunnel has only required to be lined with brick for the purpose of stopping out the percolation of water from the bed of the Mersey, at a distance of about 30 feet, beneath which the tunnel has been perforated. For the like reasons the physical character of the stone has enabled the portions of the tunnel under the streets of the two towns to be carried on without the purchase of buildings and land which would have been needed to cover the effects of subsidences in the case of ordinary excavations. The tunnel is now entirely bricked and completed from one side of the river to the other, a distance of 1250 yards. Its form is that of a depressed oval, and it is 26 feet in width and 21 feet in height, the invert being nearly equal in form to the arched portion overhead. The brickwork of blue Staffordshire bricks is 3 feet in thickness at the invert. Below the tunnel there is a drainage heading, running continuously with the tunnel itself, 7 feet in diameter. Into this at frequent intervals the water entering the tunnel is pumped, and the tunnel is in this way kept dry and efficient.

A party numbering about 200 descended in cages the shaft of the Liverpool Works and walked forward, the tunnel being lighted throughout its entire length by powerful electric arc lights; another party entered the tunnel at the Birkenhead end, and these two parties met in the middle of the tunnel, where a platform was erected on the line dividing Cheshire and Lancashire. Here addresses were made; the mayors of Liverpool and Birkenhead shook hands and proclaimed the barrier between the two counties abolished. The parties then pursued their courses, the one going on to Birkenhead, the other to Liverpool. On the Liverpool side there is a large subterranean station, with platforms and provision for

lifts which will be capable of elevating 240 passengers to the level of James street in 40 seconds. This station is 100 feet long, 50 in width and 48 in height. The furthest extremity as yet attained on the Liverpool side is under the center of Church street, close to the cathedral. When the traffic is worked the tunnel will be ventilated by two fans, one 40 feet and one 30 feet in diameter. Alongside the tunnel there is a ventilation heading cut in the rock 1000 yards long and 7 feet 4 inches in diameter. On the Birkenhead side there will be a similar station under Hamilton street, and thence the tunnel continues under the London and North Western Railway and Great Western Railway to the Haymarket. Both ends of the tunnel railway will ultimately be brought to the surface, and connected with the main lines proceeding from Liverpool in all directions. When the approaches are completed the length of the tunnel railway will extend 4 1/2 miles. So far, the authorized capital has not been exceeded, nor will it be by the further sums which have still to be expended upon rolling stock, stations and equipments.

Swing Mandrel or Punch Holder.

Among the recent improvements brought out by E. W. Bliss, of Brooklyn, in connection with presses for working sheet metal, is



Duryea's Improved Swing Mandrel for Punch Presses.

Duryea's improved swing mandrel or punch holder, shown in the annexed engraving. By this device the lower part of the mandrel is made to swing forward for examination and to facilitate repairs, &c. When in use it is held firmly in place by two screws, shown in the engraving. Should a shell or blank stick in the punch it can be removed in a moment. The punch can be upset, sharpened and replaced in working position without throwing off the belt or removing punch or die from the press. By the use of this improved mandrel much time and trouble is saved, dies last much longer and can be kept in repair much more easily than is possible with the ordinary mandrel, because the die does not require resetting every time the punch is upset or sharpened. Manufacturers of small articles of tinware will appreciate its merits without further explanation.

Handling Hard-Drawn Copper Wire.

An important point in connection with the introduction of hard-drawn copper wire, which is beginning to find so much favor with electricians for telegraph lines in the place of iron wire, is care in handling it. The Baltimore and Ohio Telegraph Company have issued the following instructions, which are interesting as bearing on the subject:

"The hard-drawn copper wire used by this company, while possessing sufficient hardness and tenacity for its legitimate use, will not stand the rough handling to which iron wire may be subjected without injury. In order, therefore, that danger of bruising or marring it may be avoided while in transit or being strung, the following directions must be complied with: Every coil should be examined before the sacking is removed. In case the covering is frayed or torn, the coil should be closely inspected to see that it has not been cut or marred from the same cause that injured the sacking. In case the wire is found to have sustained injury, the coil must not be used unless the injured portion can be easily cut out. Coils of copper wire should never be thrown from a moving train. While unreeling the wire, great care must be taken to avoid twists and kinks. Whenever a kink is found it must be cut out, and a good splice made. This also applies to splits or indentations of any kind.

"In tying the wire to the insulator, the wire should not be tied so as to touch the glass. The tie wire should first be put entirely around the glass, one twist made in it, then the line wire brought up and the two ends of the tie wire twisted around it, with at least five turns, thus leaving the line wire without bends or kinks. When done, the projecting ends must be twisted off, using the pinching portion of the Helvin grip for this purpose. Care should be taken that the hard drawn wire be not stretched as tightly as iron wire under like conditions, that it

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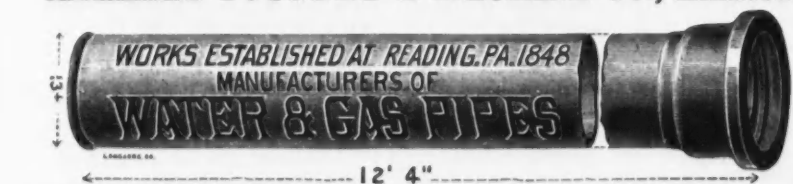
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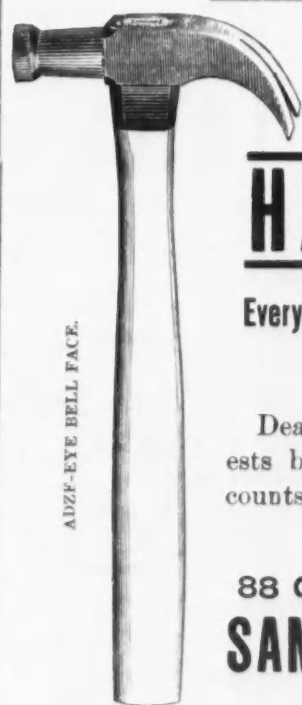
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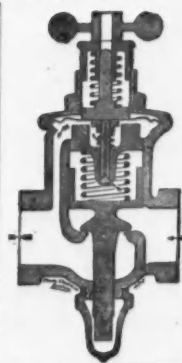
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Send to nearest office for circular.

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Plymouth, Mass.,

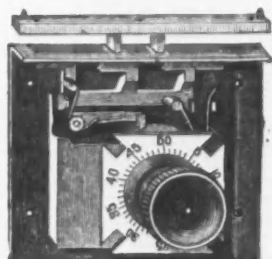
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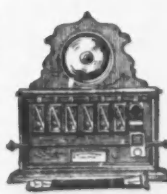
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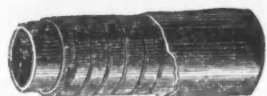
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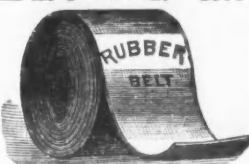
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HOSE, Vulcanized Para Rubber and Charolized Duck,
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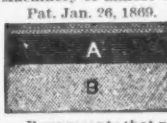
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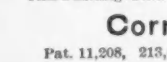
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It represents that part of the packing which, when in use, is in contact with the piston rod.
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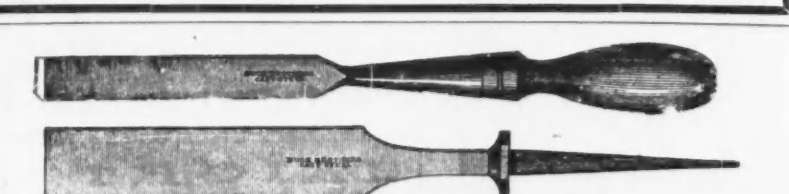
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almost indestructible, when
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its manufacture, whilst the cheap
inferior quality forced on the public by reckless imitators of our patent goods soon becomes brittle
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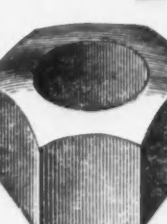
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BEARINGS, SLIDE VALVES, CYLINDER RINGS, CROSS-
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SCREWS, &c., &c.

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FORGINGS and
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may not be broken by contraction in cold
weather. Hard-drawn copper wire must
always be joined with the Helvin splice,
whether in constructing new lines or in re-
pairing breaks upon finished wires. No ex-
cuse will be accepted for the use of any other
splice. Linemen must always carry with
them a plentiful supply of the couplings."

English Letter.

(From Our Regular Correspondent.)

LONDON, February 23, 1885.

THE SITUATION

remains unaltered in its main features, the
only ray of hope which has penetrated our
Cimmerian darkness being a special cable
from New York to the *Ironmonger* stating
that the American Iron and Steel Associa-
tion have issued an address predicting a
"surprising" revival of trade. The mes-
sage gives us no idea as to when this new
boom is expected to come along, so that we
are at the moment anxiously awaiting fur-
ther information on the subject. Cynical
persons among us wholly deride the notion
that any amount of boom with you would do
us any good, their contention being that
with the tariff and your enormous latent
powers of production you would speedily be
enabled to overtake any existing paucity of
supply. Nevertheless, the idea of any
change for the better is a pleasant one, and
the message has consequently given more
satisfaction than anything for a long time
past. Certainly we are in a position to
greatly appreciate the smallest ray of sun-
shine, for our own condition is deplorably bad.
The newspapers are filled with reports
of the distress among the artisans of
the manufacturing districts and the la-
borers in London, while there are also
isolated but significant items as to the clos-
ing of works, and the resulting retirement
of firms from competition. All sorts of wild
panaceas are being advocated by men who
have nothing to lose, and desperate hearers
or readers are catching at all the straws
sent down the surface of the stream. Social-
ism, land stealing, reform and a host of isms
are propounded as certain remedies for the
dullness of trade, just as though there had
never been bad times before, or as if a dis-
ease which has attacked the whole world
could be cured by the adoption of a quick
remedy in one country only. Perhaps the
most startling and significant symptom of
our prostrate condition was an event which
took place in London on February 16. This
was the storming of one of the Government
offices by some of the unemployed, of which
occurrence I have no doubt you have had
telegraphic reports. This is generally felt
to be a very serious, not to say ominous,
occurrence, for it shows that there is a spirit
abroad which needs only opportunity and a
little more encouragement to cause very
serious disturbances. The fair traders, natu-
rally enough I suppose, have seized upon the
incident as affording strong presumptive
evidence in support of their claims. At one
of their meetings, held at Sheffield on Feb-
ruary 13, the master cutler, who is an
ardent fair trader, said: "Those men in
London were in earnest who on Monday
night attacked the council chamber, in
which sat Her Majesty's ministers, and de-
manded work, and they left sad proofs of
their earnestness in the shape of eight police-
men seriously injured." At this meeting, I
may add, the fair traders carried their resolu-
tions by a majority of two to one.

THE IRON MARKET

is almost precisely as it has been for some
weeks past, so that there are really few fea-
tures to note in connection with it. There
is a somewhat hopeful tone in some quarters,
but the industrial and political situations are
not at all bright, the latter being especially
detrimental to the development of business.
Any revival in the United States, could
scarcely fail to make itself felt here. The
American Iron and Steel Institute is a re-
spectable and responsible body, so that it
may be assumed that their address would
not have been issued had there not been good
grounds for placing it before the trade
generally. Caution in basing actual business
upon the bare fact thus set forth is advisable
when it is remembered that some time must
elapse, even under the most favorable con-
ditions, before any actual benefit could ac-
cure to our manufacturers from a "boom"
in the States.

At Glasgow the market has been quiet
throughout, and values have been relatively
weak, the closing price of warrants being
41/1 1/2 p. ton. In Scotch makers' brands
there have been scarcely any changes in
values, and the amount of new business
done has not been large. Stocks are again
increasing rapidly, and shipments are on a
comparatively small scale; the changes of the
week have been unimportant, No. 3 being
nominal at about 34/6 @ 35/ p. ton. The
prospects of trade in the district are poor,
and the current consumption, with the ship-
ments, are insufficient to absorb the produc-
tion, so that the statistical position in Cleve-
land is not improving, but rather the con-
trary. Some anxiety is felt as to the exact
nature and extent of the new restriction
arrangement, but up to date no official in-
timation has appeared as to the final decision
of the ironmasters. In hematite pig iron
there has been no movement of any conse-
quence, but values are rather more nominal
at about 44/ for mixed lots in usual propor-
tions, and good buyers have no difficulty in
shading the open market rates. This re-
mark also applies to crude iron elsewhere,
the smelters being everywhere confronted
with difficulties in disposing of the entire
output of their furnaces. In heavy iron
work there is a fair amount doing in some
quarters, but ship plates, angles, &c., are
not in very good demand. Ordinary finished
iron is still irregular at the figures recently
quoted by me, and the turnover is chiefly in
respect of the cheaper grades of bars, rods,
&c. The sheet mills continue to be fairly
busy but not fully employed. Old materials are
nominal and neglected at last week's prices.
Freights are rather firmer, Eastern rates
having been hardened, owing to absorption
of a good deal of tonnage by the Govern-
ment for transport purposes. Pig iron from

Glasgow to New York is a shade firmer, 1/
p. ton having been paid by ordinary steam-
ers at Liverpool. Freights continue very
low. The 4 figure having failed to draw
much tonnage that way for the Mersey
liners, a reduction to 2/6 has been made,
with little better result. It is now under-
stood that 1/ p. ton would be an acceptable
figure for tin plates, the same as has been
taken for pig iron. The bulk of the tin
plates for America goes via Swansea. Steel is
dull, and there is very little work in hand,
relatively speaking, at the Sheffield convert-
ing and melting concerns, always excepting
the firms with specialties in tool steel, forg-
ings and castings. The Bessemer works are
steadily engaged, and the Siemens establish-
ments are well employed. Steel rails are
unaltered in almost, or quite, all respects on
the basis of 44. 15/ p. ton for ordinary
heavy sections.

SCOTCH PIG IRON

is a shade steadier at the time of writing,
mainly on the strength of the telegram from
the United States already referred to, which
has caused some speculative buying of war-
rants, and thus has sent up prices thereof a
few pence per ton. There are 92 furnaces at
work, as against 97 a year ago. In Connal's
stores there are 585,352 tons (an increase of
2122 tons last week), compared with 593,-
370 tons this date 1884. Shipments to date
have decreased by 10,389 tons, while im-
portations of Middlesboro' pigs into Scotland
have increased by 19,743 tons. Current prices
are:

Deliverable alongside.	No. 1.	No. 3.
Gartsherrie, at Glasgow.....	32/	47/
Coltness, ".....	35/	50/6
Langloan, ".....	35/	51/6
Summerlee, ".....	31/6	46/6
Calder, ".....	32/	47/
Carnbroe, ".....	49/	46/
Clyde, ".....	47/	43/
Monkland, ".....	42/3	40/
Quarter, ".....	42/	39/6
Govan, at Broomielaw.....	42/	40/
Shotts, at Leith.....	51/3	51/3
Carron, at Grangemouth.....	49/	48/
selected.....	53/6
Kinnell, at Bo'ness.....	44/6	43/6
Glenarnock, at Ardrossan.....	48/6	43/
Eglinton, ".....	43/	39/6
Dalmellington, ".....	47/	43/6

MIDDLESBORO' PIG IRON

is irregular, owing to the uncertainty which
exists as to the action of the ironmasters on
the restriction question after the end of this
month. The local consumption continues
poor and shipments to foreign destinations
are not large. For G. M. B., f.o.b. at makers'
wharves in the Tees, net cash, prices are:

No. 1 Foundry.....	37/6	Mottled	32/9
" 2 ".....	36/	White	32/6
" 3 ".....	34/6	Refined Metal	50/
" 4 ".....	33/9	Kentledge	36/6
" 4 Forge.....	33/3	Cinder.....	31/6

HEMATITE PIG IRON

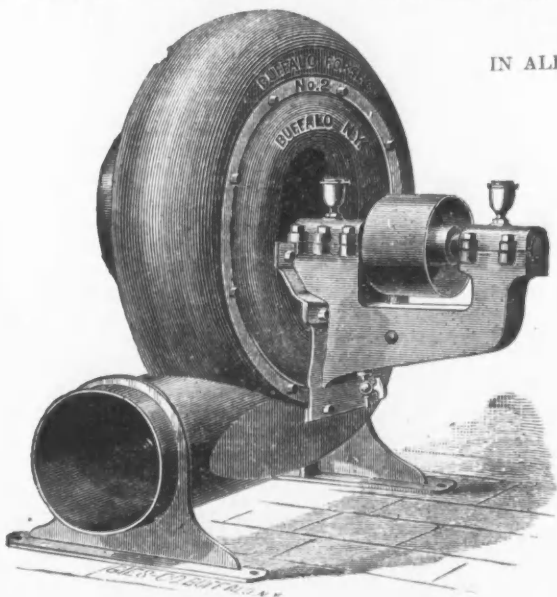
is quiet and a shade weaker, although the
smelters are remarkably stiff in fighting
against lower rates. For mixed lots about
44/ is the quotation and West Coast makers'
brands are:

No. 1	No. 2.	No. 3.
Cleator.....	45/6	45/3
Lonsdale.....	45/6	44/6
Workington.....	45/	44/
West Cumberland.....	45/	44/
Lowther.....	45/	44/
Distington.....	45/	44/
Harrington.....	46/	44/
Solway.....	45/	44/
Maryport.....	45/	44/

TIN PLATES.

In London the improvement noted last
week has been well maintained, and, though
at the moment I do not hear of quite so
much doing, the aggregate business effected
during the past seven or eight days has been
fairly large. Prices are better, and now it
would be difficult to place an order for or-
dinary IC cokes below 13/9. The American
buyers have been active in their purchases,
so much so that I hear that most of the
works are well booked for the next few
months. I quote IC cokes 13/9 @ 14/4, f.o.b.
Liverpool. At Liverpool things are a little
quieter, and therefore somewhat easier this
week, inasmuch as for some days there have
not been so many inquiries about, and on
other days, when inquiries were pretty
numerous, not so much business has resulted
in consequence of the higher figures now
generally quoted. Some makers have been
making too rapid strides in that direction.
The wiser and better plan to have pursued
would be to make the advance a gradual one
instead of making a big jump at once. The
latter plan has simply frightened buyers
away and for the moment checked business.
Makers' quotations in some cases lately have
been quite as much too high as buyers' offers
previously were too low. The leading fea-
ture this week again has been the demand
for steel plates, both Bessemer and Siemens,
in the various grades of coke-finished plates,
the former predominating over the latter,
as they take the place of coke tins so much.
Special sizes, such as 10 x 20, 14 x 19 1/4
and 14 x 19 1/2, are now chiefly made of
Bessemer steel, and the two latter sizes seem
to have made a considerable inroad on the
ordinary size of 14 x 20. The demand for
the latter size diminishes, while that for the
two other sizes increases, from week to week
as time goes on; 14/ IC is the general price ob-
tained for these in ordinary coke finish; other
and better grades of finish, 14/3 @ 14/6 IC.
Siemens steels are not so much asked for
this week, though there are some orders in
hand ready to be given out. But when any-
thing above 15/ IC is quoted it fails to draw
business that way unless it is something very
special. The demand for ordinary sizes of
coke tins is hardly an average one, but there
are some special sizes being asked for, such
as 11 x 22, 22 x 14 and 12 x 12, &c., which
bring the business up a little. So far prices
continue firm at 13/6 @ 14/ for ordinary
kinds; the other and better brands, 14/3 @
14/6 IC. Coke-tin wasters in good brands
still command 13/3, and there is a good de-
mand for ordinary kinds at 1 1/2 d. @ 3d. less.
In charcoal tins there has not been so much
doing this week, inquiries are fewer, and are
not of that kind that really mean business,
at least not many of them. There is no
change in prices. There seems to be a
rather strong inquiry going on for ternes,
but not so much actual business has been
arranged, in consequence of most of the
works being pretty full of orders, and they
are now sticking out for something like a
substantial advance, which, however, they
cannot as yet get.

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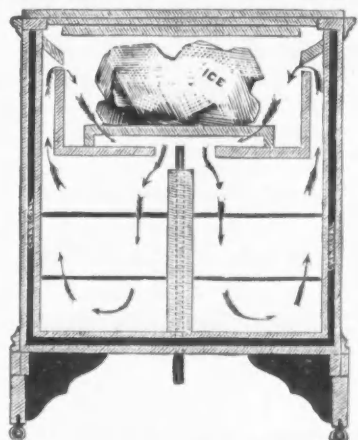


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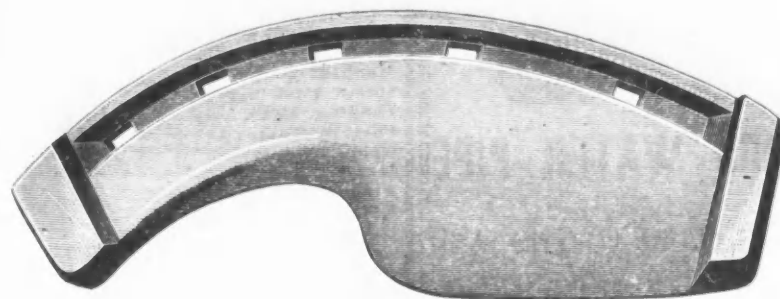
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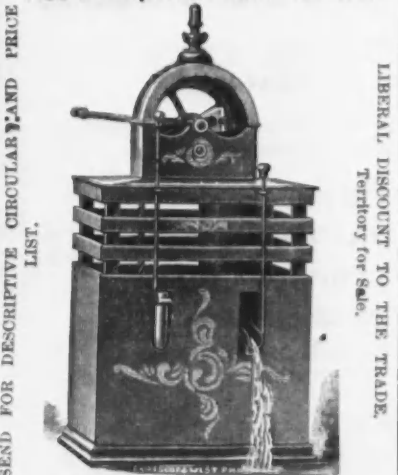
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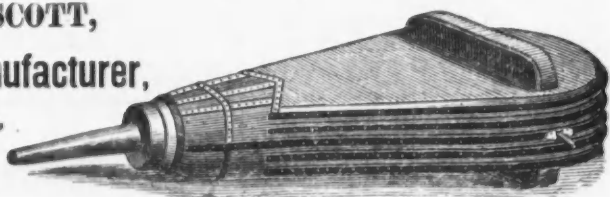
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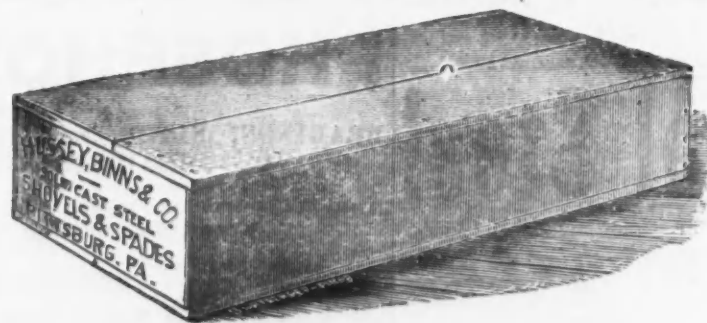
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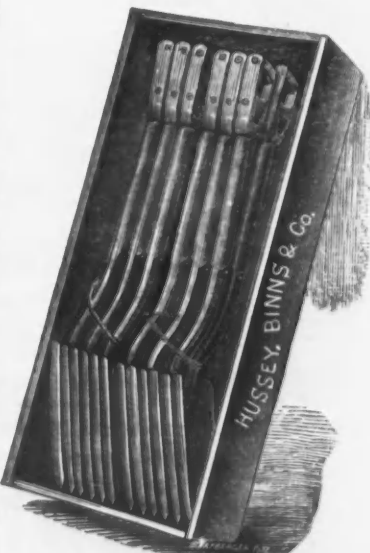
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(Continued from page 1.)

and E the tapping hole. F is the main wind-box, into which the blast from the pipe A is conveyed, and from whence it passes through the tuyeres O into the converter. G is the differential-piston cylinder; H the differential piston; K the stopper; L the stopper-rod hand-wheel; M peep-hole cap; N the tuyere block, and O the tuyeres. P is a passage from down-take from the pipe B to the back of the differential piston H. R is the stopper-rod adjusting screw, and S the stopper-rod.

The automatic closing of the tuyeres is effected thus: At the moment the blow is finished the valve leading to the secondary-pipe B is opened fully, driving the blast through the passageway P (shown on plan) into the cylinder G behind the larger end of the piston H. The pressure of blast being the same in the cylinder G as in the wind-box F, as the piston H is double-faced, having one end of considerably larger diameter than the other, the same pressure of blast per square inch introduced into the chamber G forces the piston and stopper-rod against the end of the tuyere O, closing the hole therein, except for a small aperture in the stopper K, fed by the holes shown through the hollow stem S. This small amount of blast suffices to keep the molten metal from running back into the tuyeres, keeping them

not entirely cut off, but its pressure is regulated and reduced by any one of several patented devices, which makes it possible to keep a uniform pressure at the noses of all the tuyeres, thus accomplishing the same purpose as the differential piston and stopper of the old converter, viz., to keep the tuyeres free from molten metal or slag. In practice it is found that this works with perfect certainty. Before pouring the metal for the next blow it is necessary to open the doors, introduce a light pricker-bar and break off the slight film of chilled metal which may form over the nose of the tuyere. Opening the door, as shown in Figs. 6 and 7, is very easily effected, it being only necessary to twist the handle about 12° or 15°, which releases the three spring catches and allows the door to open.

The dimensions of the new converter are fully given in our illustrations. It may be stated that the lining, which is gannister, is 12 inches thick, that the centers of the tuyeres are 9 inches above the bottom of the converter, and that the depth of metal above the center of the tuyeres is 8 to 10 inches above the bottom of the converter. It is this fact, it will be remembered, which is regarded by leading metallurgists as explaining the notable peculiarity of the Clapp-Griffiths steel, the elimination of silicon, and the possibility, growing out of it, of using pig higher in phosphorus. We may

steal when they go into the world again. Our informant did not hear of any social science associations in Japan, but he found an active practical philanthropy permeating the educated community to improve the condition of the inmates of prisons.

METALLURGICAL NOTES.

The Rising of Steel During Rolling.

It has been repeatedly observed that rolled-steel ingots rise more or less in the reheating

Later the ingot was sawn in two at the point where the steel had swelled most. Dr. Mueller gives a *fac-simile* of the section of the swelled ingot, showing clearly two enormous cavities grouped symmetrically around a central core of sound metal, and connected in their upper part by a narrow channel. The two corresponding sides of the ingot had strongly bulged, and the concave form of the other two, with the four corners of the ingot sharply twisted, clearly illustrate how powerful the gas pressure must have been. Dr. Mueller attempts to explain this

hydrogen diffuses most readily, the comparatively low percentage of that element in the gas analyzed is explained. He attributes the swelling of steel in the rolls in rolling sheets to the same causes. In an ingot with an unsound core while it is being rolled down there is too much thickness of metal to allow the gas to escape. But, as the sheet grows thinner, the resistance to the expansion of the gas becomes less, and it finally causes the sheet to swell. Dr. Mueller quotes an instance in which this occurred at the seventh pass in the sheet mill, breaking a weak roll. In rail mills blisters are often noticed appearing on the web of the rail. All these phenomena Dr. Mueller attributes to the one general cause—the pressure of gas originally in the ingot in casting.

Cold-Rolled Steel.

Some time since the *Ironmonger* stated that cold rolling of steel was carried on in this country exclusively. This has brought out protests in Germany. Among others H. Ehrhardt writes to *Stahl und Eisen* that he has built a number of mills for cold rolling, and that he himself is using a mill for cold rolling band-saw blades for sawing iron and steel. These thin blades must be hard and tough, and that he accomplished by cold rolling. He says that he cuts through 18-inch ingots with such saws. Herr Darlen, in another communication, adds that at the Sandvic Works, in Sweden, they roll steel strips 80 mm. wide and .15 mm. thick, the maximum variation allowable on the latter dimension being .01 mm.

A Novel Method of Making Steel Plates.

With the object of getting over the drawbacks due to the irregular heating of large ingots for rolling plates, Whitley has devised a plan which is decidedly original, and which is reported to be successful. He uses a hollow metallic cylinder lined with refractory material which is revolved at great velocity around a horizontal axis. Through the whole length of the interior of the cylinder runs a gutter provided with orifices through which the steel flows. Issuing from the orifices the steel is thrown against the walls of the vessel, to which it adheres in the form of a hollow cylinder. The latter is taken out when hot and cut through with a saw. It is then rolled in the ordinary manner.

A New Method for Analyzing Coal Gas.

At the last meeting of the Société Technique de l'Industrie du Gaz en France, M. Chevalot showed an apparatus, simple and more sensitive than that of Orsat, for measuring the proportion of carbonic acid in coal gas. The arrangement consists of a test-tube upon a stand, containing a known quantity of caustic potash. The top of the tube communicates with a graduated tube, the end of which dips into a vessel of colored water. After having driven out the air and filled the test-tube with gas, the cock is closed and the gas allowed to stand for 15 or 20 minutes. If the gas contains carbonic acid the colored water rises in the graduated tube in correspondence with the absorption of the carbonic acid by the caustic potash, and the number of divisions marked on the tube gives directly the percentage of the impurity in the gas. Another arrangement of precisely similar design facilitates in the same way the estimation of the amount of hydrocarbons absorbed by bromine. Together the two sets of tubes constitute a very convenient means of testing samples of coal gas.

Plant and Processes.

A machine for converting ingots of steel or iron into bars or tubes has been patented by J. J. Fisher, of Cleveland, Ohio, and J. A. Herrick, of New York City. The machine consists of three pairs of horizontal rolls, arranged upon a horizontal plane. These rolls are geared to a power shaft extending along one side of the machine bed. Between each pair of horizontal rolls is placed a pair of vertical rolls, the function of which is to preserve the tubes or bars in proper form and to aid in giving them the desired shape. The shafts of the vertical rolls are placed in adjustable bearings, so that they may be moved toward or away from each other. The vertical rolls are not connected to any driving mechanism, but are revolved by the work itself as it passes through them. The horizontal rolls are grooved around their periphery. If tubes are to be formed, proper die blocks are employed.

A puddling and heating furnace provided with an extra draft arrangement has been patented by T. H. Bennett, of Iron-ton, Ohio. The crown of this furnace is provided with two or more horizontal air passages, which extend from the furnace front to the rear of the heating chamber. A slide-valve at the mouth of these passages is intended to control the quantity of air admitted. As the air currents pass in a direct line up to their point of discharge they flow in the same direction as the currents passing from the puddling chamber into the chimney. These currents are therefore not obstructed or turned aside, but are charged with oxygen to intensify the combustion, accelerate the draft, and consume the carbonaceous particles. The crown of the furnace is built with horizontally-perforated bricks, which, being placed side by side, form the horizontal air passages. These passages should be about 1½ inches in diameter.

A. F. Wendt, of New York City, has patented an apparatus for recovering the volatilized metals from the smoke or waste gases of blast and other furnaces. The apparatus consists of a horizontal inlet-pipe connected by a series of vertical stand-pipes to a horizontal outlet-pipe. Within each stand-pipe there is placed a cylindrical wire screen reaching from the bottom of the stand-pipe to the upper side of the outlet-pipe. The screens are braced in proper manner and are set in a sand packing below and in a flanged ring above. Suitable openings in the inlet-pipe, directly below the stand-pipes, permit the withdrawal of the metallic deposits from time to time. As the gases pass through the screens, the metal will be deposited in a finely-divided state and may be removed by sharply tapping the screens and opening the lids over the discharge openings. The gases that have passed through the apparatus are said to be clean and to burn with a clear, blue flame, without appreciable smoke.

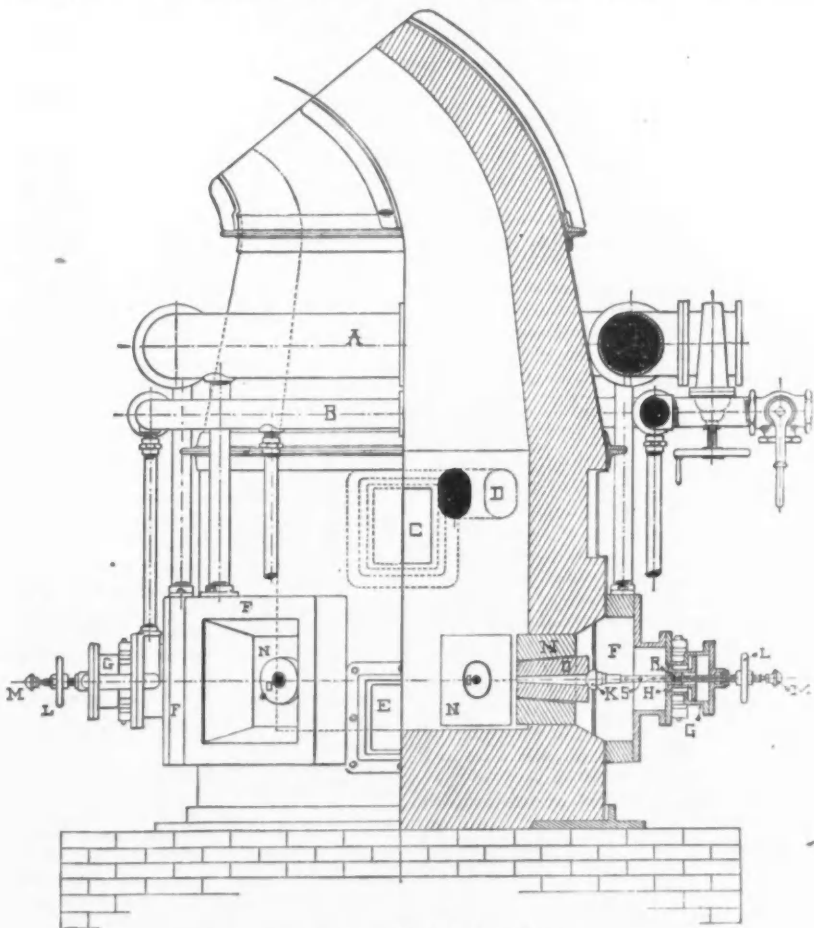


Fig. 4.—Elevation of Fixed Bottom Converter.

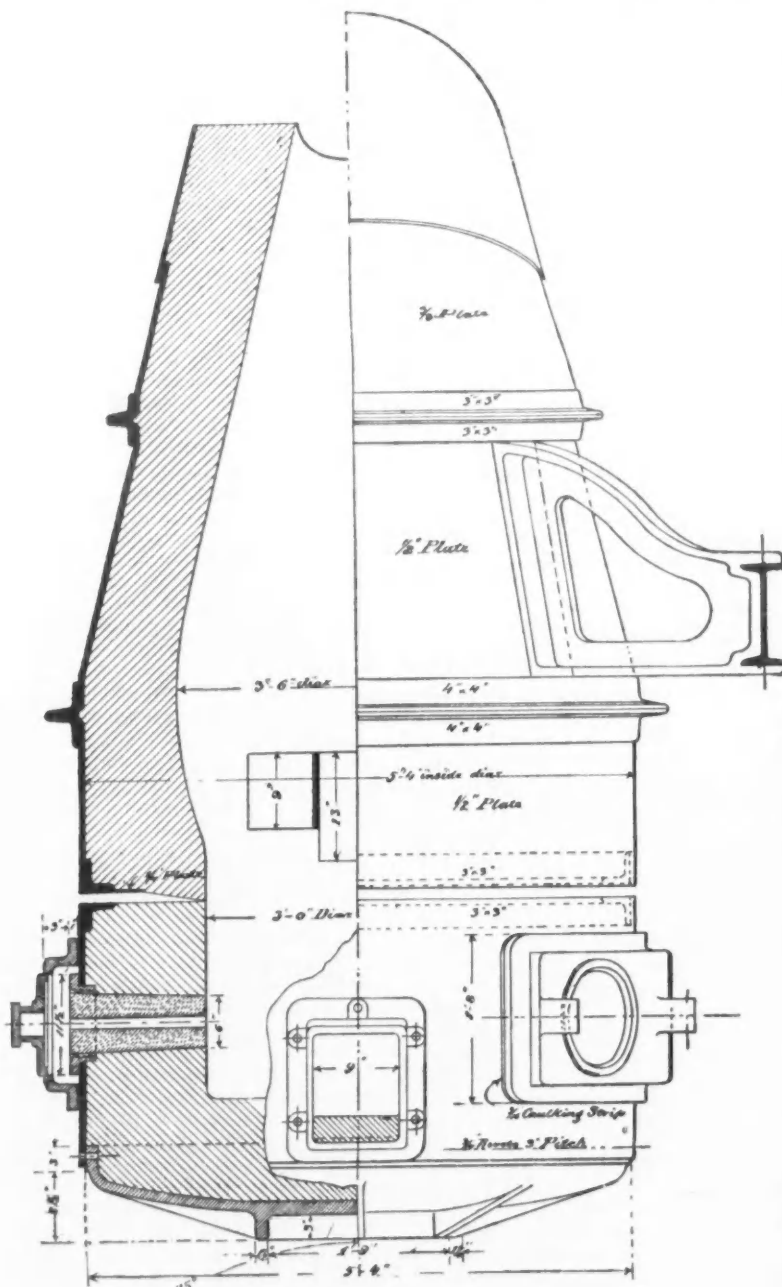


Fig. 6.—Elevation of Removable Bottom Converter.

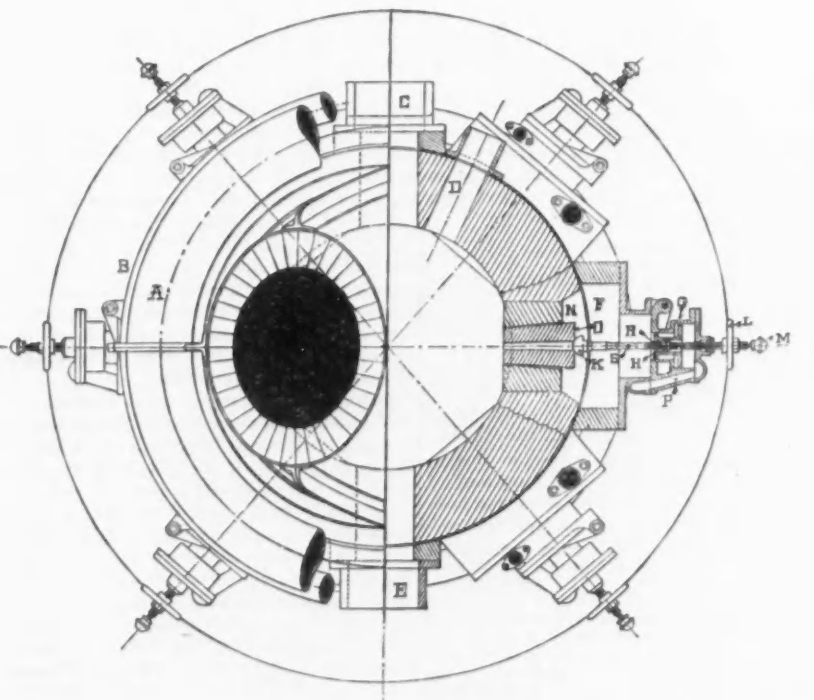


Fig. 5.—Plan of Fixed Bottom Converter.

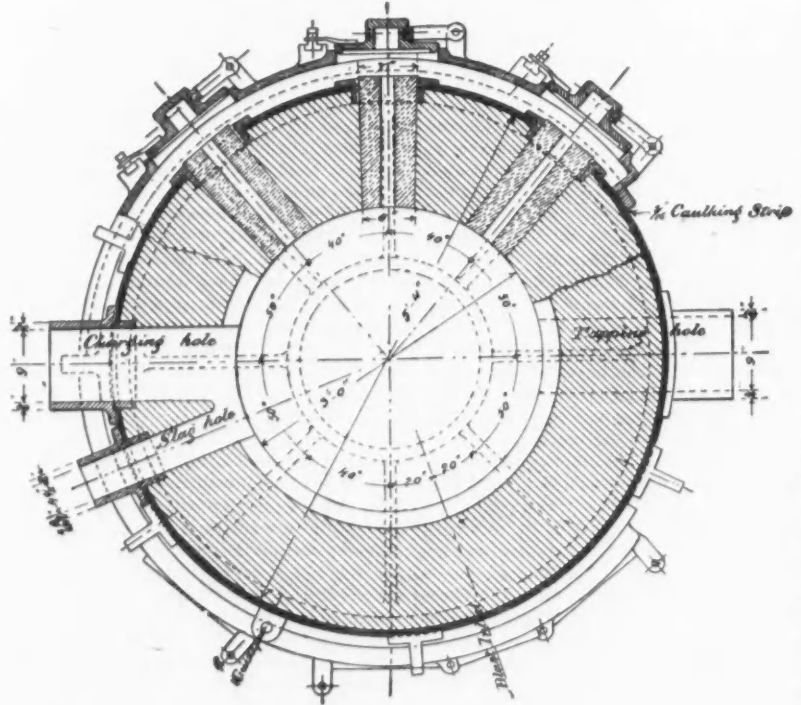


Fig. 7.—Section of Removable Bottom Converter.

THE NEW CLAPP-GRIFFITHS STEEL PLANT AT PITTSBURGH.

free and open. The metal is then tapped out. This operation is simply reversed when the molten metal has been poured into the converter, the blast remaining on in the main pipe A as long as operations are continued. As soon as the molten metal has reached a sufficient depth and the blow is to begin, the valve of the pipe B is closed, the pressure removed from the back end of the differential-piston H, and the effect of the blast in the wind-box F is to drive the piston H out, driving back the stopper.

In the new converters, which we illustrate in Figs. 6 and 7, this arrangement was not adopted, because the removable bottoms render it undesirable, the wind-box and tuyere arrangements being entirely different. No pipes whatever corresponding to the pipes A and B of the old converters are used. The blast is simply led into an annular chamber or wind-box surrounding the bottom of the converter, except for a short distance on the front side, to allow room for the tapping hole. The blast at the end of the blow is

add in conclusion, since it is a point repeatedly inquired after recently, that thus far the smallest ingots cast at the works at Pittsburgh have been 6 inches square.

Japan appears to be in advance of the State of New York as regards the industrial treatment of prisoners. A recent visitor says that prisoners in the jail at Yokohama are self-supporting. Instead of being like some of our places of confinement, a heavy charge on taxpayers, prisoners are there taught various trades. In going over the huge area it was like visiting a series of industrial establishments here. The employments all are engaged at are multifarious, such as type-setting, book-binding, shoemaking, tailoring, porcelain painting, cooking and a hundred other things. Each prisoner has an allowance equal to what in our currency is 3 cents per day, and 50 cents per week is paid to their credit, and the aggregate amount paid to them on their discharge, so that they do not require to

furnace, making the continuance of the rolling impossible. In other cases this rising happens only in the finishing rolling. Dr. F. C. G. Mueller, of Brandenburg, Germany, has had occasion recently to study this phenomenon more closely, and reports the results of his observations in *Stahl und Eisen*. At one of the German basic steel works a 1200-pound ingot of the ordinary section was broken down previous to rolling into an eye-beam. When it was put back into the reheating furnace it began to rise over half its length, and was taken out and put aside. Later it was drilled into under water, the gas inclosed in the cavities, contrary to all expectations, showing no pressure. It was analyzed by Dr. Mueller, and was found to contain:

	Per cent.
Hydrogen.....	43.0
Nitrogen.....	28.5
Carbonic oxide.....	37.2
Carbonic acid.....	1.6
Oxygen.....
Total.....	100.3

phenomenon in the following manner: All Bessemer steel, and particularly basic steel, contains many times its volume of inter-molecular gas. Although this gas has a tendency to escape, the cohesion of the metal does not allow it. It is a different thing with unsound ingots, and the particular form of porous ingots is that there lies between the sound core and the sound shell a layer containing a large number of blow-holes. When such an ingot is being broken down, the mechanical action of rolling tends to crush this layer or zone, and the outer shell separates from the core. During the reheating the compressed gas succeeds in bending the shell outward, and causes the swelling or bulging. The absence of pressure of the gas in the cavity when drilled into is remarkable in the face of all evidences of high pressure. Dr. Mueller believes that the gas must have escaped in the furnace, and that during the heating of the ingot a part of the gas must have diffused through the walls of the cavity. Since

The Iron Age

AND

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Birmingham, Alabama, as an Iron-Producing Center.

The latest testimony to the present prosperity and the future greatness of Birmingham, Ala., as an iron-producing center comes from an Ohio ironmaster, Mr. Robert Bentley, of the Ohio Iron and Steel Company, Lowellville, Ohio. Mr. Bentley was one of a party of gentlemen interested in iron manufacture who made a trip through the Southern iron-producing districts. He has given the results of his observations to the public in an interview published in the *Youngstown News Register*, which he has kindly supplemented by additional data in a letter written to *The Iron Age*. Concerning the conditions affecting the manufacture of iron at Birmingham, Ala., and its immediate vicinity, Mr. Bentley dwells upon the easily-mined, abundant and cheap ore, the vein which dips into Red Mountain at an angle of 15 to 35° ranging in thickness from 12 to 20 feet. He places the cost delivered at the furnace at from 90 cents to \$1.12 1/2 per ton, but points out that while the soft ore carries from 48 to 52 per cent. of iron, about 11 per cent. of silica and .5 per cent. of phosphorus, the hard ore yields from 28 to 34 per cent. of iron only, and varies within wide limits, so far as its contents of lime is concerned. It is to the latter fact and to the inferior quality of the coke, carrying as it does 16 to 22 per cent. of ash, that he attributes an irregularity in the working of the furnaces, frequent scaffolding, short life of the lining and low proportion of No. 1 grades of iron made, in spite of the fact that the furnaces are well built and are equipped with every modern appliance. Mr. Bentley takes the ground, and we are sure that all who have had experience with "cheap labor" will agree with him, that in spite of lower wages per unit of time the efficiency of a better class of better-paid men more than counterbalances the apparent saving in that direction. Mr. Bentley feels warranted in esti-

imating the cost of the majority of the Alabama furnaces at \$12.50 to \$13.50 per ton of pig iron.

With its natural advantages, therefore, the Alabama region has its drawbacks, many of which can and will be remedied as experience teaches how to choose the ores and how to improve the coke. The aggressive policy of the makers of the new district has been made possible chiefly by the wise and vigorous aid extended to them by the railroads. The schedules of rates published some time since in *The Iron Age* fully bear this out, especially since the figures we gave are subject to rebates in many cases. While this wise policy has not been imitated, for instance, in the Mahoning Valley, to which Mr. Bentley specially refers, it has been followed in at least a few prominent instances in Pennsylvania. We know of furnaces in the Lehigh Valley whose iron is shipped to tidewater for less than 70 cents a ton. Such reductions of course afford some relief, but they do not strike at the root of the evils of which many furnaces in Ohio, Pennsylvania and elsewhere complain. It is the freight on the raw materials which is the most telling factor, and which is rendered so light to Alabama producers by proximity to coal and ore. It is estimated by excellent authority that the actual cost of carrying coal—the cheapest freight to handle—is not more than 1/4 cent per mile on leading roads for long hauls, and that 1/2 cent per mile is certainly a fair allowance for short hauls on trunk lines. Making due allowance for the fact that much ore and coal are carried over railroads with little traffic as compared with trunk lines, and that with them the cost may be double, it will be fully understood by manufacturers of pig iron in the North and West that in the majority of cases there is room for a considerable reduction without asking the railroads to abandon a fair profit. We are pleased to note that a few railroad companies are beginning to appreciate the situation, and we trust that the time is not far off when producers in different districts will be on a more equal basis.

A readjustment of freight rates on coal, ore and pig iron does not necessarily mean the stifling of the growth of iron manufacture in the South. Its future, we take it, lies in another direction than in trying to capture more than a small share of the Northern and Western pig iron markets. It lies in the erection of stove foundries and in the establishments for converting on the spot into water-pipe, hollow-ware and a thousand other articles the pig iron which is now sent to the North, to have a large proportion of it returned in a manufactured form.

Warranty in Sales.

Very few goods are sold nowadays without some kind of a warranty as to their quality. Buyers, in fact, refuse to purchase unless such a warranty is given. It is true that of late manufacturers and tradesmen have fallen into the practice of giving extravagant and worthless warranties, which neither they nor their purchasers can believe to be genuine, and the practice of warranty in general has fallen into disrepute. Nevertheless it has its proper use, and even in the case of the reckless representations referred to damages can be recovered if the goods do not come up to what they were represented to be. What is a warranty, and what determines its value? Any direct, positive assertion or representation as to the quality of the article, whether the word "warranty" is used or not, if intended to influence a customer to buy, is a warranty on which the latter has a right to rely. But it must be remembered that a mere expression of opinion on the part of the buyer is not a warranty. If he should say of his merchandise that it was a first-class article, or that there was nothing better in the market, or that he had given universal satisfaction, or that he was sure the customer would be pleased with it, or that every one said it was a good thing and he thought so, too, or that it was very saleable—these statements are mere matters of opinion. A man often imagines he is getting a warranty when he is not. There must be some affirmation of positive knowledge to constitute an actionable representation. On the sale of a horse, for example, the owner told the purchaser that "he was sure the animal was perfectly safe, kind and gentle in harness." Yet when the latter sued him, on finding the reverse was true, he could not recover anything because this statement was not a warranty, but an opinion.

In this country a warranty must be express. It cannot be implied from the fact of the sale alone. The principle that the buyer must look out for his own interests—*caveat emptor*—and ask for the warranty, if he desires to be protected, is applied. No matter how poor or worthless the purchaser may find the article after he has bought it, how different it is from what he had expected, or how high a price he has paid for it, that is his misfortune, and he must bear the loss unless he has an express warranty. Sometimes the rule works rather harshly, particularly in cases where there is reason to suppose, though it cannot be legally proved, that there was fraud, or at least deception, on the part of the seller. Yet any other rule would, on the whole, work more injustice, and one can protect himself in every case by demanding a warranty. If he cannot get one, he then knows he is buying without it, and his attention will be

drawn more closely to examine the goods, and if his judgment is reliable and he takes proper precautions he will not be injured. A warranty need not, of course, be in writing, but it may be. If the contract of sale, however, is written, it must contain the warranty, and a verbal warranty made at the time is of no value, as the parties are conclusively presumed to have put their final agreement in the writing. Descriptions and representations in circulars, bills of sale and advertisements are good warranties, even though nothing is said expressly in addition or confirmation at the time of the sale. If the statements of the advertisements were the inducement to buy, the purchaser may sue on this as a warranty in case those statements be untrue.

The principal ground on which is based the necessity of an express warranty is that the buyer has equal opportunity of inspecting the goods and judging of their quality as the seller. The fact that he does not examine them makes no difference so long as he has the opportunity of doing so. He is bound to do it. But where there is or can be no such opportunity, then the rule is different. There is then, without any special representations, a warranty implied that the goods are merchantable and equal in quality to similar goods which pass under the same name. It is better, of course, to obtain an express statement to that effect, but it is not absolutely necessary. This variety of sales concerns goods at sea, to arrive or in transit, or in a warehouse, and the common method is to sell them by sample. It is impliedly warranted that the bulk is equal to the sample. If the sale is made upon an average sample consisting of several samples thoroughly mixed together, the implied warranty is that if the several packages be mixed they will form an article equal to the quality of the average. The purchaser cannot reject several packages as not being equal to the sample shown.

There is another class of sales where there is an implied warranty as to the quality of the article. If a thing be ordered of the manufacturer for a special purpose, and it is supplied and sold for that purpose, there is a warranty implied by law that it is fit for the purpose. The reason why an express warranty is not necessary in this case is that the buyer relies on the judgment of the seller to give him the thing he wants. The manufacturer generally knows better than any one else the kind of machine or article which will be necessary to effect the purpose described, and when he accepts the order he really undertakes to see to it that the article desired will be furnished. Moreover, there is here no selection by the buyer. The manufacturer makes the selection. The title does not pass until accepted by the buyer, and he can return it if imperfect. But if the buyer should himself select a specific article, even though he states that he wants it for a special purpose which he describes, he then makes the selection with full opportunity of inspection, and there must be an express warranty to protect him.

A manufacturer of copper was applied to for copper to be used "for sheathing a vessel." The copper was furnished, and proved very defective, lasting only about four months in place of four years, the usual time of wear of good sheathing. The decay was ascertained to be caused by some intrinsic defect in the quality of the copper. There had been no express warranty. Under these circumstances the shipowner was entitled to recover the amount of his damage on the theory of an implied warranty that the copper would be fit for sheathing. In one case a man ordered "a patented machine for printing in two colors." It was delivered to him, and when he was sued for the price he succeeded in avoiding liability on the ground that the machine did not answer the purpose for which he ordered it. Upon a sale of steel to be used in the manufacture of edged tools, there is an implied warranty that it is fit for the use intended, and as its defect could not be ascertained upon inspection, but only upon working it up, the buyer was allowed to retain the steel and yet refuse to pay the full price agreed upon, remaining liable only for what the steel was really worth, and not for what he promised to pay at first. The purchaser in such cases can recover as damages the cost of his own materials used in experimenting upon the steel and going on with the manufacture, until he discovers that it is worthless or unfit in a greater or less degree for the purpose. In one instance an agent called on the buyer and described a kind of oil he was selling as "machinery oil," and stated that it "was suited for machinery, &c." The other party ordered a quantity, and used it in his establishment. It proved unsuitable and damaged his machinery. It was held that not only was he not bound to pay for the oil, but he was entitled to recover for the damage done to him. A manufacturer offered steel to the Morris Axe and Tool Company and the company purchased it. There was no express warranty as to the quality of the steel, nor was anything said about the purpose to which the company would apply it. Yet it was held that the name of the company in itself was a sufficient indication of the contemplated purpose, and a warranty was implied.

As to what damages may be recovered on a breach of an express warranty, it is to be borne in mind that the buyer cannot return the goods and demand back the money he paid. What he can do is to sue for the difference between what the goods are worth and what they would have been worth if

they had come up to the warranty, which is, generally speaking, the price he paid. There is no hardship in this. The present value is what the goods will sell for in the market, and if he recovers what he paid to the seller, less this present value, he suffers no loss. In an implied warranty, however, which, to recapitulate, only occurs where there is no opportunity of inspection—where the goods are sold by sample, where the buyer does not select, and where the article is manufactured for a specified purpose—the goods may be returned, and the money paid, if any, can be recovered back. It is better as a matter of practice to offer to return the goods in every case, even where there is no legal right or compulsion to do so. The reason why the goods can be returned in the case of an implied warranty is that the title has not passed, nor does it pass unless the goods are equal to the warranty; while in the other case, where the buyer selects and takes them with him, the title passes to him at once.

In conclusion it may be remarked that no warranty, even if express, covers patent defects—defects perfectly obvious to buyer and seller—and which any ordinary man could discover at once. And it is also a general rule that if there has been fraud in the sale whether a warranty was given or not, the contract can be repudiated by the buyer as soon as he discovers it. Concealment of defects in the goods or article, though these were known to the seller, is not fraud, however. There must be an intent to deceive, and some positive act in the furtherance of that intent.

Condition of the Anthracite and Bituminous Furnaces March 1, 1885.

In another column we give our monthly report showing the condition of the anthracite and bituminous furnaces of the United States on the 1st day of March, 1885. The table, in a condensed form, presents the following:

Fuel.	In blast.		Out of blast.	
	No.	Weekly capacity.	No.	Weekly capacity.
Anthracite.....	89	22,880	134	30,316
Bituminous.....	91	46,774	131	44,573

As compared with the report for February 1, 1885, this shows an increase of five anthracite furnaces in blast, and an increase of four bituminous in the month of February. The chief changes among anthracite furnaces are in the Lehigh Valley, where four more are in blast, three more out in the Schuylkill, and two more in each of the Susquehanna valleys. Though several furnaces have blown in in Pittsburgh, others have gone out, and one less is in blast than on February 1. One more is in blast in the Shenango Valley, one less in the Youghiogheny, three less in Virginia, two more in the Mahoning Valley, and three more elsewhere in Ohio.

Since the first of the year our report have shown the following as the number of furnaces in blast, and the capacity of the same on the first of each month:

Fuel.	January 1.		February 1.		March 1.	
	No. in blast.	Capc.	No. in blast.	Capc.	No. in blast.	Capc.
Anthracite.....	80	21,564	81	21,189	86	22,880
Bituminous.....	82	36,812	87	41,653	91	46,774

This shows the same number of anthracite furnaces in blast March 1 as January 1, but a greater capacity. There are nine more bituminous furnaces, with nearly 10,000 tons greater weekly capacity.

Co-operative Coal Mining.

The miners of Western Pennsylvania are agitating a scheme of co-operative coal mining. It is proposed to purchase a "going" concern on the Monongahela River for \$20,000 down, the amount to be raised by one hundred miners who put in \$200 each, the balance of the purchase money to be paid in installments. Mr. John Flannery, secretary of the Coal Miners' Association, who has been the active promoter of this project, says:

There will be no trouble to secure contracts for coal. The contemplated company is assured of a contract for 80,000 bushels, which will insure the men work for one year at least. The men will occupy their own houses and the rent paid will go into the general fund and be returned to them. I have two weeks to complete the arrangements, and have no doubt that the company will be successfully organized. Co-operation is the solution of labor troubles, and this move will no doubt bring out similar schemes that have been in contemplation for some time. As soon as the company is formed I will withdraw, and it cannot be said that my object is to further a scheme for my own benefit.

Our advice to those who think of entering this scheme is that given by *Punch* to those contemplating matrimony. We do not recall the number of undertakings of this kind whose inception we have recorded. It has certainly been quite large, and so far as we are advised, every one of them has failed, sweeping away the earnings of the miners who have embarked in them. It is possible that this project may succeed, but the chances are against it. When it does fail its ill success will be heralded as an evidence that even under the "most favorable auspices co-operation is a failure." No one can doubt that co-operation has been, is and will be a success who is familiar with its history in England and France. It does not follow by any means that every body of workmen who rush into it can carry it through. The conditions of success in co-operation are the same as in ordinary business. There is no peculiar merit in co-op-

eration that will make it successful when ordinary systems fail. Is it fair to suppose that 100 men picked at random, their only recommendation being that they possess \$200, will succeed where there have been so many failures? Will the capital of these miners be subject to any different laws from the capital of their late employers? We judge not. We desire most earnestly to see co-operation successful and generally adopted. We believe that in it will be found a solution of many of the vexed questions relating to labor, and out of it may come that industrial peace that is so anxiously looked for. For this reason we deprecate ill-advised attempts that are doomed to failure from their inception.

Cuban Finances and the Sugar Crop.

Cuban finances and the large sugar crop of 1884-85 attract more attention just now, because the Foster-Eldon treaty with Spain has, during the past four months, excited more than usual interest in everything relating to the financial and economical condition of the island. As there is a project on foot just now to float in Paris a new Cuban loan, it will not be amiss to examine what the indebtedness of the colony really amounts to at present:

	Pesetas or francs.
The Goguel loan.....	30,000,000
The 6 per cent. 1879, for which the duties are pledged.....	350,000,000
The 3 per cent. loan with sinking fund.....	200,000,000
Sundry subsequent loans and debts.....	100,000,000
The floating debt.....	100,000,000
Irre-claimable paper money in circulation.....	200,000,000

Total.....980,000,000

Equal to.....\$196,000,000

The income for the current fiscal year is estimated at \$28,000,000.

Considering the resources of the island, it must be confessed that the Cuban debt is comparatively small, and that, with good management and economy, after consolidating 600,000,000 pesetas of the debt at 3 per cent. and resuming specie payments, the island ought to be able to get along financially. This seems to be the opinion of Paris, Madrid and Havana bankers, and for this reason negotiations have commenced with the Spanish Government in order to induce it to guarantee the consolidation loan it is proposed to place on the European market. Although the Spanish Government rather favors the idea of a unified Cuban debt, and in principle is not opposed to guaranteeing the loan that would be necessary to carry out the unification, it has so far only offered a subsidiary or partial guarantee. Independently of this projected consolidation, Cuba is to appear in the European market with a \$40,000,000 railroad loan.

The sugar crop, which has of late years fluctuated between a yield of 450,000 to 550,000 tons, is this year estimated to produce between 600,000 and 700,000 tons. Prices, it is true, are low, yet this large production shows what in a good crop year Cuba is capable of turning out even at a time when gradual abolition has partially disorganized labor. The annual export of sugar from Cuba has fluctuated widely of late years. Thus, in 1870 there were exported 873,197 tons; in 1878, 474,429; in 1879, 623,935; in 1880, 495,420; in 1881, 449,067, and in 1882, 381,681. Havana in a good crop year exports 12,500,000 pounds of tobacco, and 155,151,000 cigars. Near Santiago, on the southeastern coast, American companies are mining iron ore, and the long-flooded Cobre copper mines are being taken in hand again in the same locality. The raising of live stock is also a great industry in Cuba—of cattle in particular. Only 974 miles of railway are in operation, and 150 in course of construction, in addition to which there is to be built a great central railroad, for which the loan above alluded to is to be raised. There are 2835 miles of telegraph in operation, with 187 offices.

Out of the \$10,711,700 worth of domestic merchandise shipped from the United States to Cuba during the fiscal year 1884, sugar machinery figured to the amount of \$1,417,232, in a year when sugar was low and the crop small. In a good crop year, and at prices that leave the planter a margin, Cuban sugar machinery orders are apt to exceed the above amount considerably. This will suffice to show that a flourishing Cuba is to our machine shops a source of good profits, as it is also to a great number of American industries. But Cuba, with its present finances, its paper money and high gold premium, its heavy taxes and so far not very economical administration, cannot flourish with any degree of steadiness. Hence it is so very desirable that the consolidation scheme should be successfully carried out. There is little doubt but that it will be carried to a safe issue, even if Spain withholds a full guarantee, for the interests involved, especially in the shape of paper money, are too great not to induce the powerful financiers engaged in the operation to assume some risk. There is, indeed, too much money in the transaction not to tempt them.

The recent colliery explosion in Hungary at the mines of the Staatsbahn Company has brought to the knowledge of the world the admirable provision existing at many of the Continental collieries of a relief fund in cases of accident and sickness. As was brought out at the Cincinnati meeting of the Mining Engineers, last February, similar provisions are made to a very limited extent in the coal mines of this country, but they are by no means as systematic or as general as those that exist in Europe. The fund established

for the relief is contributed to by both owners and men, not in the way of voluntary gifts, but in fixed payments per month per man, or in some cases the sums contributed are a percentage of the wages earned and paid. The fund so provided is fairly adequate to the demand, and is paid out not as charity, but in satisfaction of legitimate claims upon it. From such sources the needy obtain adequate relief without having to submit to the degradation of receiving alms. The relief fund of the Staatsbahn Company is 2,000,000 florins, and is administered by a joint committee of employers and employees. Of the great value of such a provision against sickness, accident and the removal or incapacity of the bread-earner there can be no question. Such relief associations are becoming more and more common in this country. The only danger to be guarded against is that these relief funds shall in some way come to be regarded as an excuse for lower rates of wages. This seems to be the idea on which these funds in certain countries in Europe are formed. Such an idea prevalent in regard to the relief funds in this country would utterly destroy all hopes of making them in any way general or of value to the workman.

Trade of the Congo.

The West African Conference, recently adjourned, results in the final settlement of the various territorial claims to the lower portion of the Congo, in which European traders are chiefly interested. The African International Association, therefore, is at once enabled to enter upon its career as the "Congo Free State," under auspices which practically guarantee the permanence of its existence. Thus a considerable section of the Dark Continent is mapped out anew, comprising vast regions in the interior as yet comparatively unknown, further than that they comprise millions of inhabitants now for the first time accessible to modern civilization. By the convention which has just been signed the African Association comes into undisputed possession of the north bank of the Congo through almost its entire length; also of the south side, after reaching the important trading station Vivi, below the cataracts, which is a point located approximately half-way between the Atlantic Ocean and Stanley Pool, the virtual present head of navigation. The south bank, with the exception named, is Portuguese territory, who in addition have about 40 miles square of territory on the seaboard, just north of the river's mouth, where English merchants have numerous settlements, including Kabinda, Molemba, Ladana and Massaba, and who consequently are greatly distressed that they find themselves without the jurisdiction of the blue banner centered with a golden star, symbolizing the free state. Although the latter possesses only a small part of the seaboard originally claimed, it still has all the estuary of the river on the right bank and about 38 miles of frontage on the Atlantic Ocean. A contemplated railway will have its river terminus at Stanley Pool, thus making the transit from the Upper Congo independent of the cataract-broken stream. In this broad field rival nations will find full scope for commercial enterprise for ages to come.

Fictitious Co-operation.

It has been the misfortune of co-operation that many of the attempts at co-operative production have taken place under such conditions that they were doomed to failure from the start. Co-operative distribution may succeed, no matter what may be the financial condition of the section in which it is undertaken, for people must live and must have the necessities of life which are generally dealt in by co-operative stores. So also co-operative production may and has succeeded in many cases where the starting of the works has grown out of strikes. Some of the mills at Wheeling, which were originally started as co-operative establishments in part, have been undertaken more or less by reason of labor difficulties. The same is true of some co-operative potteries, glass works, &c. But when, in a period of depression like the present, workmen, who generally have insufficient capital, undertake to run on a co-operative plan works in the running of which the previous owners have become financially embarrassed, it would seem that such attempts were doomed to failure. In the West at the present time negotiations are in progress for such co-operative iron-making. At one of these establishments the boilers, heaters, rollers, &c., have made a proposition to the citizens of the place that, if they would furnish \$6000 to \$10,000 capital and lease the mill for them for one year from the creditors, they would leave one-third of their pay for the year in the office to offset the capital furnished by the citizens. At another mill the assignees have made a proposition to some 50 of the skilled workmen that if they could in any way secure the raw material he would sell them the mill, allowing them to pay for it by leaving a portion of their wages in the office. It does not occur to us that this is co-operation. The probable outcome of both of these movements, though we should be glad to chronicle a different result, will be that the workmen will virtually perform their labor as much under the ruling prices

of the district as the percentage which they leave in the office represents. The conditions under which co-operative production can be made a success are no other than those under which any other business can be made a success—wise and prudent management and honest work. To manage a co-operative establishment successfully requires as high abilities, as close economy, as wise foresight, as inflexible a determination not to over-manufacture, as it does to manage a mill conducted on the ordinary plan; and if protection can be made a success only by reduced wages on the part of the operatives, it is made a success only by sacrificing the one idea for which co-operation is undertaken, viz., to give the employee a more equitable proportion—not a less proportion—of the results of his labor than he would get by the ordinary method of employment.

There is a decided improvement in the Connellsville coke trade. A few weeks ago less than 50 per cent. of the total number of ovens in that district were in operation; now 70 per cent. are in blast. The average daily shipments have increased to over 600 cars. While this increase in the production of coke is chiefly accounted for by the starting up of the furnaces at the Edgar Thomson Steel Works, and of coke furnaces in other sections of the West, it does not account for it all. It is possible also that furnaces in the East are using a larger proportion of coke than heretofore. Some furnaces east of the Allegheny Mountains, in what were formerly exclusively anthracite regions, are now running wholly on coke, the ease of working, increased output and advantages of coke more than counterbalancing the increased cost that the use of coke sometimes entails. There are now 10,435 ovens in the Connellsville region. This is an increase of 4000 ovens since the close of the census year.

The best illustration of the rapid growth of the basic process in Germany is furnished by a few figures computed by the Association of German Iron and Steel Manufacturers. They have for the past two or three years initiated a system of collecting monthly the statistics of the production of pig iron, classifying it by grade. According to the data collected for 1884, the output was as follows:

	Metric tons.
Mill pig	2,073,693
Spiegelisen	128,555
Bessemer pig	480,083
Foundry pig	395,079
Total	3,077,410

German furnaces, therefore, in 1884 produced more "Thomas" pig than Bessemer pig iron, an eloquent proof of the rapid development of the basic process.

High-Phosphorus Steel and its Rolling Qualities.

To the Editor of *The Iron Age*: I have read with pleasure Mr. Laureau's letter to you, presenting as it does some data which had either been overlooked by some of us, or else forgotten; and beyond this because it will help to draw the attention of metallurgical engineers to the Clapp-Griffiths converter, and thus all the more quickly demonstrate its possibilities. Of its already-demonstrated advantages there cannot be any question. In it there can be made from ordinary Bessemer iron a metal possessing characteristics and desirable qualities which the same iron treated in the ordinary Bessemer converter will not yield, and this at a cost much below a point attainable in either the Siemens-Martin or puddling furnaces. That this is true I consider settled beyond dispute.

As to its possibilities in the direction of using high-phosphorus irons, let me refer to my statement in the paper read at the New York meeting of the American Institute of Mining Engineers: "How far and with what certainty the use of high-phosphorus irons can be carried remains to be determined. * * * When they (the works of Messrs. Oliver Bros. & Phillips) resume I have no doubt the experiments will be continued."

While Mr. Laureau makes interesting comparisons between the tests of high-phosphorus Clapp-Griffiths metal as given by me, and the tests of high-phosphorus Terrenoire open-hearth steel, drawing conclusions unfavorable to the former, let us not overlook the fact that my figures referred to a comparatively few samples, and those made in the very first experiments, while the latter covers tests from "more than 1000 bars." Let us beg for a little more time.

The Clapp-Griffiths high-phosphorus steel is made from very different material, and by an entirely different process from the Terrenoire metal; but I do not hesitate to assert, from what I have already seen, that with the former steel, containing 0.36 % of phosphorus, no fear need be felt on account of its not rolling well. I feel confident that as the phosphorus increases, after perhaps a certain point, the metal will not stand so high a heat. In mill practice there is heating and heating; therefore, I would advise a little care in judging of results when this metal comes to be tested. Of course I do not believe that high-phosphorus steels are as good as metals low in that element, but at present I am inclined to think that the Clapp-Griffiths converter will make the best from the best, and also permit us to produce a material much better and cheaper than thousands of tons of stuff that have been made and sold as "refined iron."

In conclusion permit me to say that I am not done with the Clapp-Griffiths matter, and your readers shall know of my experiences. Remember, sir, that I belong to the "big" Bessemer family, but this little fellow promises pretty well. ROBERT W. HUNT.

Condition of the Anthracite and Bituminous Furnaces of the United States, March 1, 1885.

DISTRICTS.	ANTHRACITE.					BITUMINOUS.				
	Total number.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.	Total number.	Number in blast.	Capacity per week.	Number out of blast.	Capacity per week.
New England	1	0		1	160					
New York	40	8	2,140	32	8,130	1	0		1	285
New Jersey	17	4	1,340	13	3,425					
Pennsylvania:										
Lehigh Valley	51	26	8,295	25	6,620					
Schuylkill Valley	44	13	3,075	31	6,900	1	0		1	700
Upper Susquehanna Valley	24	9	2,284	15	2,355					
Lower Susquehanna Valley	38	25	5,035	13	2,015					
Pittsburgh						17	12	10,030	5	3,800
Allegheny Valley						4	1	500	3	247
Shenango Valley						28	8	4,323	20	6,177
Youghiogheny Valley						6	3	1,185	3	916
Juniata and Conemaugh Valley						27	13	4,764	14	2,955
Maryland	5	1	120	4	700	1	0		1	140
Virginia						12	5	2,420	7	1,991
West Virginia						7	2	1,056	5	1,770
Ohio:										
Mahoning Valley						18	7	2,010	11	3,970
Eastern Central and Northwestern						18	7	3,360	11	4,150
Hocking Valley						15	0		15	2,602
Hanging Rock						15	7	1,376	8	1,465
Kentucky						3	2	750	1	400
Tennessee						8	6	2,620	2	980
Georgia						1	1	600	0	
Alabama						10	8	4,280	2	370
Indiana						2	1	200	1	200
Illinois						16	7	5,850	9	6,125
Michigan						2	0		2	580
Wisconsin						3	0		3	1,540
Missouri						7	1	550	6	3,010
Total	220	86	22,880	134	30,305	222	91	46,774	131	44,373

WASHINGTON NEWS.

WASHINGTON, D. C., March 10, 1885.

(From Our Regular Correspondent.)

The nomination of Mr. C. S. Fairchild, of New York, to the position of Assistant Secretary of the Treasury, so long occupied by Judge French, has been received with decided marks of approbation by New Yorkers regardless of party lines. This is no reflection upon Judge French, who has filled that exacting office for a long term of years. As Attorney-General of the State of New York, Mr. Fairchild gave ample evidence of his ability as a counsel and advocate, and in his new position his qualities as a lawyer will be called into frequent use. The post which he will fill, among other things is charged with the hearing of appeals from the assessments of duty by collectors of customs, and the rendering of decisions upon such appeals in accordance with his interpretation of the tariff statutes. It is not likely that he will have any trouble in securing a confirmation. He is expected in the city to-morrow, and will take charge of his office as soon as confirmed.

THE NEW SECRETARY OF THE TREASURY.

Daniel S. Manning, the new head of the Treasury Department, takes hold in a business-like way. His time thus far has been absorbed in receiving congratulations. In conversation with the correspondent of *The Iron Age*, he said that he expected during the summer to go over the whole subject of the tariff and give the question such attention as it merits. The inference was that the Administration would, after a careful examination of the tariff as an economic, revenue and administrative measure, formulate a policy of its own, and would put it forth as a party question, to be supported by all friends of the Administration. The various phases of this question will be given in this correspondence from time to time, as the Administration develops its plans. A new party having assumed control of the executive branches of the Government, the questions of new legislation on the tariff or the correction of existing statutes become a matter of paramount interest to all manufacturers.

THE CUSTOMS DIVISION.

The customs division in the office of the Secretary of the Treasury, so long filled by Mr. James, has not escaped the notice of the office hunter. It is doubtful, however, whether a change will be made in the head of this office, or at least for some time. A knowledge of the routine work is regarded as absolutely essential to its successful management. In this particular Mr. James could not be conveniently replaced. The Assistant Secretary, with whom this office has direct relations, has the reputation of being a practical civil-service reformer. In that event he may show it by retaining some experienced men about him.

THE COMMISSIONER OF PATENTS.

The name most frequently associated with the Commissioner of Patents is Robert B. Vance, the Representative of the Eighth District of North Carolina in the Forty-Eighth Congress. He is a native of the old North State and a farmer. He is 57 years of age; was clerk of the Court of Common Pleas; rose from captain to brigadier-general in the Confederate service, and has served in six Congresses. He was not returned, and is, therefore, one of the 78 Democratic Representatives who will not appear on the roll of the Forty-ninth Congress. In the last Congress he was chairman of the Committee on Patents, and in that capacity gave close attention to patent legislation. If an outside appointment should be determined upon by Secretary Lamar, ex-Representative Vance would possess many of the qualifications demanded by the place. The name of Dr. Dymenforth, of Illinois, the present Deputy Commissioner of Patents, is also mentioned. As he has frequently served as acting commissioner, and having risen through all the grades from clerk to assistant examiner, examiner and deputy commissioner, he is better equipped for the place by experience than

any one in or outside of the office. He has also reorganized the office in a great measure, and has made decided improvements in the rules governing the office and its practice. Another name suggested is that of a Mr. Shaw, of Boston. He may be a person of great fitness for the place, but, being a stranger in the list of familiar personages associated with patent affairs, if appointed he must have claims which are not publicly known at present.

A NEW NAVY.

The new Secretary of the Navy is decidedly in favor of the construction of a new navy, and from present indications that will be one of the pet measures of the Administration. As soon as the pressure of the congressional hosts shall have subsided the Secretary will confer with experienced naval officers on the subject, and from these conferences he will be able to form some definite plan of procedure. As the vessels will be of iron or steel, the demand for these metals when the work fairly commences, it is believed, will make a decided impression for the better in the market.

DOMESTIC MANUFACTURES FROM FOREIGN MATERIALS.

The Secretary of the Treasury has addressed a letter to the collector of customs at New York that articles of domestic manufacture made from foreign materials, and upon which customs drawback has been obtained on exportation, and which are not subject to internal-revenue tax under the laws of the United States, are dutiable, on reimportation, at the same rates as foreign products of like character.

PICK SOCKETS AND FERRULES.

The collector of customs at Chicago has been instructed that cast-iron pick sockets and ferrules, made for Hardy's patent picks, which have been cleaned and brightened in a manner common to such castings, by friction with others in a revolving machine, are dutiable as castings, notwithstanding that they have been subjected to the process referred to.

The Water-Gas Incandescent Light.

A promising rival of the electric light, both for domestic and general use, seems to have been found in Mr. Fahnehjelm's water-gas incandescent light, which was shown at one of the sessions of the recent annual meeting of the American Institute of Mining Engineers. Notwithstanding the many attempts to utilize directly the great intensity of combustion of water gas for lighting purposes, very little work of real practical value was accomplished and success seemed as far off as ever until Mr. Fahnehjelm succeeded in demonstrating that the problem which had baffled so many could be solved in a very simple manner. His apparatus consists essentially of an iron frame placed over an ordinary burner. In the top of this frame, so arranged that the flame from the burner impinges upon them, are two parallel rows of needles, but a short distance apart, and looking like two very coarse combs placed side by side. The needles consist of magnesium very highly compressed under hydraulic pressure and then baked at a high temperature. The heat of the burning water gas causes the needles to become incandescent, and the resulting light, while in every way equal, and in some respects superior, to that from an electric incandescent lamp, is immeasurably more satisfactory than that supplied by ordinary illuminating gas. The question of cost is naturally one which will immediately present itself, but on this point we are informed that, while the magnesium needles will last some 80 hours of active service, they cost only from 2½ to 3 cents apiece, and that the water gas can be supplied at 50 cents per 1000 cubic feet and still leave considerable room for profit, the consumption, moreover, being no greater than with coal gas. The magnesium needles are adjustable, and may be raised or lowered according to the size of the water-gas flame and the degree to which they may have become worn by the intense heat. One

of the several interesting points to which reference was made, and which was illustrated during a brief discussion following an oral description of the light, was that the gas, after having been cut off completely for a brief period, could, when again turned on, be easily relighted by the incandescent combs. The danger of turning a gas-cock past the point where it ought to stop, and thus allowing gas to escape unperceived except by its odor after a sufficiently large quantity had accumulated, is therefore entirely avoided. Similarly, it has been known to happen that the gas in a system of pipes was occasionally divided by air spaces, the latter being sufficient to blow out the flame and let the succeeding portions of gas escape unperceived. Should this happen in a sleeping apartment, with the inmates asleep, the nature of the result may be readily imagined. Mr. Fahnehjelm's light is entirely free from all these objectionable features, which circumstance, combined with the brilliancy of the light, its low cost and other advantages, will secure for it considerable popularity.

Strengthening Bridges.

The work of strengthening an abutment of the Chestnut street bridge across the Schuylkill River, in Philadelphia, which was commenced last October and has in part been completed, is in many respects interesting, although its essential features are by no means new, having formed the subject of a good deal of comment in connection with the well-known Hudson River tunnel project. The bridge comprises two spans of 155 feet each, and the western abutment is situated upon what was the river flat, there being at the time of construction 27 feet of mud, under which was a stratum of about 5 feet of gravel and boulders, below which was bed-rock. White-oak piles were driven to a firm bed, and the heads of these, after leveling, were embedded in beton to a depth of 2½ feet. Upon this was laid a platform on which the masonry was erected. Though the foundation maintained its vertical position, the thrust from the long flat arch in a few years forced the western abutment through the yielding material in which it rested, and it became evident that unless this movement was arrested the span would fall into the river. A certain amount of the thrust was communicated to the approach through two small arches. The fact that the space beneath these arches was used for traffic which could not be interrupted for any length of time led to the placing of wooden struts at the water line, from the abutment to the arch pier and from this to the base of the approach, the effect of this being to transfer the thrust, through the struts, to the solid approach.

Though this served the purpose admirably, the city, after some time, sought for something more permanent to save the bridge than timber struts. Several plans were received, but that proposed by Messrs. Anderson & Barr, of this city, was finally adopted. In brief, this plan was to build four iron cylinders of ½-inch iron, 8 feet in diameter, and extended downward to bed rock at such an angle (about 45°) as to embrace the line of thrust of the arch, and fill them with concrete. By this plan the weight of the arch is transferred to a solid foundation through four stone columns 8 feet in diameter. In carrying out this method no further disturbance of the ground was necessary than to start the cylinder. The concrete was made of one part of cement, two parts of sharp sand and four of broken stone. Two of these stone struts have now been completed—one 65 feet long and the other 62 feet. Compressed air is, of course, used in conducting the work, and in building the cylinders a space large enough to admit an iron plate is dug out, when the plate is inserted and bolted to those already in position. Adjining spaces are then excavated and other plates put in, and in this way the cylinders are formed, plate by plate and ring by ring, until bed-rock is reached.

THE WEEK.

The Great Eastern Steamship Company, of England, have been ordered by the court to wind up their affairs—an ignoble ending for a scheme so ambitious.

The latest rapid-transit rumors in Brooklyn refer to a syndicate who contemplate building steel elevated railroads in the main thoroughfares, with a lateral bridge connection at the City Hall.

The great feature of local manufacture at Sheffield, England, is the enterprise shown by four of the large firms in laying down extensive plant for the production of heavy forgings for guns. The new forging presses will equal, if not surpass, any others extant.

A circular from the Spinners' Union at Fall River, Mass., points out the marked contrast in the prices of print cloth now and in years gone by. The highest price this year has been 3½ cents a yard. The highest price reached in 1864 was 38½ cents per yard; 1865, 27¼. In 1872, when wages were 50 per cent higher than they are now, the highest point reached was 9 cents per yard. In 1880, when wages were 30 per cent higher than they are now, the highest price given for print cloth was 5½ cents per yard. At present there are no signs of improvement.

The Natural Gas Commissioners of Pittsburgh are examining experts and other witnesses, with the object of devising some preventive of explosions from leakage. General Manager Hartup, of the Fuel Gas Company, exhibited a new kind of fitting, which he thought would be of great service. "We stop leaks by calking," he said, "or by putting on a sleeve, which is bolted on the casting and then made solid with lead. Contraction and expansion by heat and cold, I believe, would cause leaks where sleeves are put, as the lead having no elasticity would not give with the casting." Others testified that in some cases the castings became porous, the gas forcing itself directly through the iron, and terra-cotta pipes now being laid were open to the same objection.

The plans filed with the New York Building Department during February of this year provide for an expenditure of \$3,165,000, which is \$117,000 in excess of the expenditure at the same time last year.

The Pennsylvania Legislature having defeated the bill making underground wires compulsory, the local ordinance of Philadelphia directing the placing of wires underground becomes a dead letter. Meanwhile Chicago rejoices in the success of the underground system, and claims to be the leading city in carrying out a great reform.

Shaw Brothers, the most extensive tanners in the world, who failed two years ago for nearly \$5,000,000, have lately settled with their creditors and have resumed their extensive business at various points in Maine.

The striking hatters at Norwalk, Conn., are jubilant over the failure of Alden Solomon, with \$30,000 liabilities, and are "crowding other firms to the wall."

The quantity of sugar imported into San Francisco in 1885, chiefly from the Hawaiian Islands, was 153,915,445 pounds, an increase of nearly 20,000,000 pounds over 1884.

An important move in marine insurance has been instituted by the Tyne and Wear Steamship Insurance Association, which has passed a resolution to the effect that a minimum number of men shall be assigned to each vessel, having regard to the size and type of the ship and to the trade in which she is employed. If an insured vessel be sent to sea with a smaller number than that assigned to her and agreed upon at the commencement of the policy, the vessel shall "be deemed unseaworthy, and no insurance shall be paid in the event of loss, where such loss shall have been directly attributable to undermanning."

In reference to the steam service furnished in the lower part of New York City, it is said that with the improvements constantly making its use is destined to become general, both on account of economy and safety.

Two bills introduced into the New York Legislature authorize measures to be taken in this State for the drainage of swamp lands. The plan outlined by the State Board of Health promises to diminish greatly malarial disease, besides adding no less than \$25,000,000 to the taxable wealth of the State.

California has had a dull year in trade, but is boastful, and speaks of glorious prospects for 1885. A San Francisco paper says: "The annual balance-sheet of the metropolis of the Golden State shows that our total foreign imports by sea were \$35,679,858; our exports by sea, \$37,163,916; that we sent abroad over \$17,000,000 in treasure; that our gold and silver product was \$18,000,000; that the proportion of silver is rapidly increasing; that we produce more than half of all the gold mined in the United States, and that our Mint coined \$24,278,996 in gold and silver. We are the greatest wheat-growing State in the Union, having had 55,000,000 bushels last year, as well as over 23,000,000 bushels of barley and 15,000,000 gallons of wine. The tonnage of sailing vessels entering our port was nearly 1,000,000 tons, while our steam tonnage inward and outward to foreign ports was over 600,000 tons."

The will of Mr. Avery, the Louisville plow manufacturer, leaves \$1,000,000 to the wife and children.

The searching of English and American steamers en route for Tonquin by French men-of-war causes much exasperation.

The President of Mexico has named the ports and frontier custom houses open to foreign commerce. On the north are Ti-

juana, Quitaraquita, Nogales, Sasabe, Palomares, Ascencion, Paso del Norte, Presidio del Norte, Piedras Negras, Laredo de Tamulipas, Guerrero, Mier and Camargo.

Work on the Harlem Bridge for the Suburban Transit Company, for some unexplained reason, has been discontinued.

An application of the New York Steam Company for permission to lay pipes in certain streets is refused by Commissioner of Public Works Squire, who says: "The great privileges hitherto granted have been abused so shamefully that the present moment is opportune to declare most emphatically that the streets of this city belong to the people, whose interests I am determined to foster."

A company is being organized in Allegheny to manufacture iron ties. Why iron? In this stage in the development of metallurgy, steel should be the metal.

The percentage of Connellsville coke used east of Pittsburgh is largely on the increase, notwithstanding the great reduction in the make of pig iron and the production of coke. The annual report of the Pennsylvania Railroad shows that the east-bound coke tonnage from the Connellsville region increased 34,307 tons in the year 1884, while the west-bound tonnage decreased 357,527 tons. The entire coke tonnage of the Pennsylvania Railroad for the year 1884 was 2,846,126 tons, of which 2,367,606 tons were from the Connellsville region.

The following table shows the gross earnings, expenses and net earnings of the coal companies in which the Pennsylvania Railroad Company are interested for 1884, as compared with 1883, and also the amount of coal mined:

	Gross earnings, 1884.	Expenses (including taxes), 1884.	Net earnings, 1884.
Totals...	\$8,826,514.06	\$7,838,473.06	\$988,040.99

Increase over previous year. 847,944.38 515,798.48 332,145.90
Total tons mined in 1884, 2,250,089.12. Increase over previous year, 174,991.13 tons. The average price per ton at point of sale, aggregating the results of the four anthracite coal companies, for 1884, was \$3.7702, as against \$3.819, a decrease of 4½ cents per ton. Owing to the construction of new and competitive outlets to Western markets by some of the railroad companies which control the larger portion of this class of traffic, and the diversion thereto of coal formerly transported over the lines of the Pennsylvania road, that company have been compelled to increase their output of anthracite to supply the tonnage thus diverted, and also to further develop their coal properties to meet the traffic requirements of their lines.

From Scotland comes the news that Thos. Williamson, of the Glasgow Iron Company, Scotland, has invented a process modifying the basic Bessemer, so that it combines the speed of the Bessemer process with the certainty of the Siemens process.

One of the largest metal houses in the country now stamps all its contracts covering periods for any length of time: "Payment in gold coin or its equivalent in currency."

The Troy Works are rolling 80-pound steel rails for the New York and Hudson River Railroad.

Special investigation concerning the present stock of wheat in 12 States, which produced last year 67 per cent. of the crop, show that there are now in store 110,000,000 bushels, and in the remaining States, which furnished 31 per cent., 52,000,000 bushels. On March 1, compared with last year, the wheat and flour situation in the United States was as follows:

	1885.	1884.
Wheat, stocks of farmers, &c., 102,000,000	119,000,000	119,000,000
Wheat, visible supply.....	43,000,000	31,000,000
Flour, as wheat.....	28,000,000	45,000,000

Total, bushels.....843,000,000 125,000,000
The New York Steam Company propose this spring to double the size of their present headquarters on Greenwich street, near Dey street, and lay a large 2-foot main with lateral branches up Broadway to Canal street, supplying steam throughout the lower half of the city. Steam will be made available for extinguishing fires.

In consequence of a general strike of workmen in the shops of the Wabash system of railroads, there are heavy accumulations of freight at stations throughout the Northwest.

Railroad corporations have outwitted the steamship companies in getting possession of the river front in Jersey City, until now there is scarcely a single lot to be obtained except at an exorbitant price. These steamship companies were fortunate enough to purchase docks about three years ago, the railroad companies obtaining therefor a handsome advance on the appraisal of the Riparian Commissioners.

The General Term has confirmed the report of the commissioners in the award of \$15,000 to Mr. Rufus Story for the damage to his property by the elevated railroad. There is an appeal first to the Supreme Court and then to the Court of Appeals.

According to the annual report of the Pennsylvania Railroad Company there were used on the main line and branches, in construction and repairs, 25,517 tons of steel rails, and 787,499 ties; on the Philadelphia and Erie Railroad, 1593 tons of steel, and 25,943 ties; and on the United Railroads of New Jersey, 4768 tons of steel, and 278,605 ties, making a total of 31,878 tons of steel, and 1,092,047 ties.

Recent changes in the French and German import duties on cereals have attracted much attention in the American grain markets. The French impost before the passage of the recent act increasing duties was 60 centimes per 220½ pounds on wheat and 1 franc 20 centimes per 220½ pounds on flour. The

present duty is 3 francs on wheat per 220½ pounds, which is 15½ cents per bushel of 60 pounds. The imports of wheat into France from the United States in 1884 were 10,911,497 bushels, which is an aggregate duty of \$1,669,459 for the French consumer or the American shipper to pay. In Germany the duty on wheat is 30 marks per 100 kg., equal to 2204 pounds. One mark equals 24½ cents United States currency, or \$7.203 per 2204 pounds wheat is equal to 19½ cents per bushel of 60 pounds. The imports of Germany from the United States in 1884 were 511,465 bushels of rye and 2,570,368 bushels of wheat. The duty on rye to July 1, 1887, will be 10 marks per 100 kg., or about 6½ cents per bushel.

The Red Star steamer Westernland, New York from Antwerp, came in collision off the English coast with the freight steamer Holmsburst, which instantly sunk. The Westernland filled in her forward compartment, but repaired at Plymouth and proceeded on her voyage.

The completion of the St. Petersburg ship canal undertaking will enable ships of large tonnage to sail direct to the port of St. Petersburg without, as is now the case, undergoing transshipment of goods at Cronstadt. The canal, which is 26½ versts in length (1 verst is 5½ furlongs), runs from the Island of Goutouiev, in the Neva, to the Cronstadt roads, and has an average depth of 22 feet, and a portion of the Neva has also been dredged to the same depth.

Flour manufacture in the United States is annually about one barrel per capita of the population, now about 57,500,000, plus the quantity exported, which has for the last two fiscal years ended January 30, 1884, averaged about 9,000,000 barrels. The annual manufacture of flour in the United States on this basis is about 66,500,000 barrels, or an average of 1,278,865 barrels per week.

A circular issued by Paul F. Gerhard & Co., agents for the United States and Brazil Mail Steamship Company, shows a large and increasing trade between the United States and the River Plate country. In January and February, this year, 1626 plows were sent to Buenos Ayres and Montevideo, and 421 sewing machines. The staple articles sent in large quantities to the countries on the River Plate are lumber, axes, hatchets, chairs, cotton goods, kerosene, mowers and reapers, nails, plows, sewing machines, shovels, starch, tobacco, varnishes, scales, lard and rosin.

The Deficiency Appropriation bill passed by Congress contains among the items \$212,978 to pay Harlan & Hollingsworth, William Cramp & Sons and John Roach for the care of the double-turret monitors.

Messrs. Field and Edson are about to begin on the Second and Ninth avenue railroads, New York, the long-talked-of experiments preliminary to the introduction of electricity as a motive power.

Col. W. E. Church has been appointed by the New York Aqueduct Commissioners an engineer at \$2000 salary per annum.

A cantilever bridge 479 feet long has just been completed over the St. John's River, which connects the colonial and American railway systems and reduces the distance between New York and Halifax by rail to 540 miles. Freights are likely to be correspondingly reduced, and it is possible that the fish business of the Gulf of St. Lawrence will be revolutionized.

New engines are proposed, to cost \$24,000, for the Belmont Water Works, in Philadelphia.

A preliminary report on the fisheries of Canada, recently presented to Parliament, shows the total value of the fisheries for the year 1884, approximately stated, to have been \$17,852,721, exclusive of Manitoba and the Northwest, from which there are no returns. This would probably show an increase of over \$1,000,000, were the yield of Manitoba and the Northwest Territories added.

The Brooklyn grain shovellers, numbering 500 men, who struck several weeks ago against a reduction of wages, are again at work on the same terms as before.

The gold exports of the Gold Coast Colony, which amounted to \$15,000,000 per annum when under Dutch rule, have dwindled to \$625,000 since its transfer to the British Government.

The rapid growth in the demand for copper wire has induced a number of iron wire mills to seriously consider the question whether it would be advisable to put a part of their plant into shape to make copper wire. As yet, however, no definite decision has been reached.

The rapacity of Mexican custom-house officials is the subject of frequent complaint. A case is mentioned by *La Voz de Mazatlan* where a merchant of that city was fined for alleged undervaluation double the amount of duty, bringing up the total costs to an amount several times in excess of the actual value of the shipment. The secret of the transaction was that the officers were entitled to one-half of the amount squeezed out, as a reward for their shrewdness.

The river and harbor men in Congress, sure of getting \$5,000,000, reached for twice as much in the Senate, and lost all.

The sharp cut in steerage rates by the Hamburg ocean lines is causing such a rush of impoverished people, on their return from America to the old country, that the German authorities have issued a proclamation that they will not be allowed to land.

Dr. Collier, of the Agricultural Department, at Washington, last week delivered an address before the New York Chamber of Commerce, upon the cultivation of sorghum in the United States. The average yield of 21 different States, he said, was 30 bushels of sorghum seed per acre and 120 pounds of

clean seed per ton of cane. At Rio Grande, N. J., the yield is 10 tons of cane per acre and 3 bushels of seed per ton of cane. During the past three years over 1,000,000 pounds have been made there, and many thousands of gallons of syrup. The cost of manufacture, with all modern appliances, including mill, boilers and engines, defecators, evaporators, vacuum pans, tanks, wagons and necessary buildings sufficient for working 100, 300 or 500 tons of cane in 24 hours is diminished with increased capacity of the mill, but is for the 100, 300 and 500 ton mills \$1.65, \$1.01 and 89 cents respectively per ton of cane manufactured.

Maine has 23 lobster-canning establishments, which practically control the industry in the United States. The catch of lobsters averages about 15,000,000 pounds annually, something over one-half of which is canned. The Maine sardine industry is worth \$825,000 a year. The menhaden fishery brought in \$633,145 in oil and crude guano in 1877, but, owing to the periodic nature of the species, this kind of fishing has been practically valueless during the past three years.

The Boston Herald says: "It is understood that an agreement has been signed by a majority of rubber boot and shoe manufacturers for a general suspension of operations for one month, commencing some time in the present month."

The losses by fire last month in the United States aggregate \$10,000,000, and since January 1 \$18,500,000, surpassing the average for many years.

According to *Industrial America* there are in Michigan 117 firms engaged in the manufacture of salt with the aid of machinery, and 4500 covers for making solar salt. The manufacturing capacity of the wells is 3,875,000 barrels. The amount actually manufactured during the year ending December 1 was 3,252,175 barrels. In Marine City a solid bed of pure salt was lately struck at a distance of 2000 feet.

The president of the West Point Foundry, to disabuse the public of any wrong impression caused by the financial troubles of last summer, says work in the shops has never stopped, and that the larger part of the business consists of the general manufacture of wrought and cast iron, for which the foundry is thoroughly equipped.

The report of Special Agent Evans, of the Treasury Department, on the operations of trade between the United States and Mexico, as the result of his investigations under instructions from the department, has been received. It sets forth that the Mexican customs regulations are difficult of comprehension and unnecessarily onerous, no less than 17 papers or copies being required to be presented on a direct importation, and a consular invoice, costing \$14.56, being required when the value of goods exceeds \$40. On the question of reciprocity, Mr. Evans is of the opinion that the demand for American products appears to be too limited to make the trade important, but adds: "There is a trade maintained in that country controlled by branch houses of English and German merchants who give long credits. Were the system of transportation and warehousing of goods in bond established in Mexico it might enable Americans to compete to some extent with European trade."

A large delegation from the Massachusetts Legislature have just completed their examination of bridge sites at Storm King Mountain, where it is proposed to cross the Hudson River.

A bill to regulate the use of natural gas has been introduced into the State Legislature of Pennsylvania. That this highly useful, but somewhat dangerous, fuel demands careful handling, if the safety of life and property is to be consulted, is sufficiently evident from the disastrous explosions that have occurred recently in Pittsburgh, which were due to leakage of the gas. The bill in question provides for the appointment of a State commission of five men at a salary of \$2000 a year each, whose duty it will be to inspect the pipe lines and appliances of all natural-gas companies, and order such repairs or precautions for safety as they deem necessary. The fullest powers are given them to prevent any corporation from operating until they shall comply with all requirements concerning measures to prevent leakage and explosions, and to exact these regulations heavy penalties are attached for companies or persons who refuse to obey the commissioners or to allow them access to their property. It also gives the commission authority to call upon the sheriff for aid in digging up pipes and enforcing repairs and improvements. This bill shows that the Pennsylvanians are beginning to realize that with the advent of natural gas there has also come a new danger to be guarded against both by State and individual exertion. Natural gas, as an important commercial factor, is of so recent a date that its peculiarities and properties are not yet fully understood, and it remains for experience to discover how dangerous the use of this fuel is, and how far its dangers can be guarded against without interfering with its economical employment for manufacturing and domestic purposes.

The commercial decadence of Vera Cruz and Mazatlan, hastened by the diversion of freight over the Mexican Central Railroad, has brought out a petition to President Diaz that the free zone on the northern frontier be abolished. The petitioners represent that Mexico is liable to become "only a tributary to the United States, with no independent commerce."

The London Times pronounces the new Brazilian vessel, the Riachuelo, the most perfectly-constructed ship of war afloat, possessing, in respect to speed, coal, endurance and arrangement and fire of her guns, special advantages—such, in fact, as are not contained in any other ship. She is a twin-screw turret vessel of 6000 tons and 6000 horse-power, built of steel, 305 feet long, 50 feet wide and 30 feet deep. She can make 15 knots an hour, and run at that

speed some 4500 miles without recoaling. Her armor plates are 10 and 11 inches thick, and the armament consists of five 9 inch 20-ton breech-loading rifled guns in two revolving turrets, and six 6-inch breech-loaders, besides 15 Nordenfelt machine guns.

Safety of the Elevated Railways.

The elevated railroad managers of New York recently spoke of a "depreciation of material" as a reason for an abatement in taxable values, and this plea was quickly availed of by certain theorists in support of the allegation that crystallization of the metal threatened speedy destruction to the entire elevated system. As if to combat injurious reflections, an inspection of the structures of the elevated railroad companies was recently made by several prominent railroad and bridge engineers, on the invitation of the officers of the Manhattan Railway Company. The reports are understood to be favorable without exception. One of the reports is signed by A. P. Boller, Birdsall Cornell, Joseph M. Wilson, bridge engineer of the Pennsylvania Railroad Company; Thomas C. Clarke, of the Union Bridge Company; Adolphus Bonzano, of the Phoenix Bridge Company, and A. R. Whitney. In regard to the danger of accidents by the crystallization of the iron framework, this report says:

"So far as any question of the deterioration of material is concerned through so-called crystallization, which would endanger their safety for the traveling public, no such fear need be entertained. In all our experience, which has extended over many years, with structures submitted to heavy and continuous use under at times excessive conditions, we have never found any evidence to show that iron becomes crystalline or weak under service, if not strained beyond limits, which the calculations show have not been exceeded or approached in the case of your structures. We have inspected the structures, and we find them safe for existing traffic. We, however, deem it important that the improvements and additions now being carried out should be continued to completion. We see no occasion for any anxiety on the part of the public as to the safety of the elevated structures, in view of the very thorough inspection continuously maintained over them, through which any defects are at once made manifest long before they could assume dangerous proportions. This inspection has been so long continued and so thoroughly performed that we are satisfied the structures are in better condition to day than ever before."

An officer of the Manhattan Railway Company said that pieces of the ironwork were taken at short intervals from the structures of the different lines and submitted to rigorous tests, and that in every instance so far the result had been only an infinitesimal deterioration.

The Dispute at the Oliver Wire Mill, Pittsburgh.

The Oliver & Roberts Wire Company, Limited, have issued a card in regard to the strike of the wire-drawers at their mill, in which they say that these workmen were the only ones in their employ who refused to agree to a reduction when financial disaster overtook the concern, and this notwithstanding they had been paid from 10 to 25 per cent. higher wages than were paid to any other wire-drawers in the United States. They give the average wages per day for one week of 10 men, selected at random. The highest amount is \$4.32 and the lowest \$2.14, an average of \$3.60 per man. The price the mill proposes to pay would give the same men for the same work an average of \$3.20. This is the contract price agreed upon in November last, but which was increased 12½ per cent. by the firm on account of changes in method of manufacture, which they agreed to pay until the new method was proved a success. It is this 12½ per cent. that is now in dispute. The mill will no longer pay it, and the men will not accept the lower rate. In conclusion the firm say:

"It is scarcely four years since we began the manufacture of wire in Pittsburgh. In our various departments we furnish employment to over 1000 persons. Of these the wire-drawers number only 161, or about 16 per cent., yet they draw over 44 per cent. of our pay-roll. Their action in this matter, therefore, affects not us alone, but deprives of employment hundreds of worthy men who are anxious to work, and is driving from our city trade which naturally belongs to us. The reverses which our company have lately met prove conclusively that we must economize at every point if we expect to continue the business in this vicinity. Our creditors have dealt very leniently with us, and our efforts at retrenchment have met with a cheerful and ready response from all classes of our employees but one. We now appeal to that sense of right which is inherent in the American workman to sustain us in our contest with these men. They are not representatives of labor struggling under the oppression of capital. They are barnacles which have fastened themselves upon the body of a great and growing industry, and if they are suffered to continue their exactions they will encompass its destruction."

In reply to this the men deny many of the statements of the firm, and assert that they had suffered a large reduction of wages a few weeks before the suspension, and were not disposed to accept a further reduction. They say they have been receiving a lower rate of wages than any other wire-drawers in the world, and that they had to work from 12 to 14 hours a day to make decent wages. These contradictory statements do not seem calculated to bring the dispute to an early settlement.

The new steel war vessel Dolphin, built by Roach & Sons for the navy, which broke her steel shaft on the trial trip in November up the Sound, has had another shaft forged and put in, and another trial trip will soon take place. The Dolphin must develop a speed of 15 knots an hour under the existing contract. The new shaft is of wrought iron, 12 inches in diameter, 2 inches thicker than the steel shaft.

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Trade Report.

British Iron and Metal
Markets.

[Special Cable Dispatch to The Iron Age.]

LONDON, WEDNESDAY, March 11, 1885.

Scotch Pig.—The market is a little weaker. We quote makers' brands as follows:

Cottbus, alongside, Glasgow	54/6
Langloan, "	54/6
Gartsherrie, "	51/6
Summerlee, "	51/6
Carnbroe, "	48/6
Glenarnock, " Ardrossan	48/6
Eglinton, "	48/6
Dalmellington, "	46/6
Shotts, " at Leith	51/6
Lichterage from Ardrossan to Glasgow is 1/2 ton	

Cleveland Pig.—The market is unchanged. We continue quotations, f.o.b. shipping ports:

Middlesboro, No. 1 Foundry	38/
" No. 2 "	36/6
" No. 3 "	34/6
" No. 4 Forge "	33/

Bessemer Pig.—Is a little steadier. W. C. Hematites are quoted 44/ @ 44/6 for mixed lots, Nos. 1, 2 and 3, equal portions, f.o.b. shipping ports.

Manufactured Iron.—The market is irregular. We quote at works:

Staff, Ord. Marked Bars	7 10 0 @ 6 10 0
" Medium "	6 0 0 @ 6 10 0
" Common "	5 10 0 @ 5 15 0

Hoops, 20 W. G. and over.

" Common Best	6 15 0 @ 6 10 0
" Medium "	6 5 0 @ 6 10 0
" Common "	6 0 0 @ 6 7 6

Sheets, 20 W. G. and under.

" Ordinary Best	7 15 0 @ 8 5 0
" Common "	7 5 0 @ 7 15 0

Welsh Bars.—Are unchanged. We quote £4. 15/ f.o.b. shipping ports.

Old Rails.—Are a little steadier. We quote Old D. H's, c.i.f. New York, £3 @ £3. 5/.

Scrap.—Is a little steadier. Heavy Wrought is quoted £2. 10/ @ £2. 12/6, c.i.f. New York.

Copper.—The market is a little weaker. We quote Best Selected, £51 @ £52, and Chili Bars, £46. 5/ @ £46. 15/.

Tin.—Is weaker. Straits Ingots, spot, £76. 15/ @ £77. 5/, and futures, £77. 10/ @ £78. 5/.

Tin Plates.—Are irregular. We quote:

Tin Plates, 10x14, 1st qual. Charcoal	19/6 @ 21/6
" 2d "	18/6 @ 19/6
" 1st " Coke	17/6 @ 18/6
" 2d "	13/6 @ 14/6

Spelter.—The market is unchanged. We quote Ordinary, at shipping ports, £13. 17/6 @ £14.

Lead.—The market is unchanged. We quote Common English Pig, £10. 12/6 @ £10. 17/6.

Freights.—Steam from Glasgow to New York, 1/6.

Financial.

Office of The Iron Age,
WEDNESDAY EVENING, March 11, 1885.

The initial movements of the incoming Administration have received a large share of attention during the past week, and business is to some extent unsettled, pending the development of a new policy. The tone of the inaugural, however, tended to strengthen confidence and to counteract in a good measure the disappointment caused by the fate of the silver-coinage bill and other important measures lately before Congress. In regard to the currency, there is a growing conviction that, favored by the condition of our foreign trade, despite the falling off noticed in the Government revenues from month to month, the banks will be enabled to survive the crisis—until Congress shall afford the indispensable relief. No new instructions on the subject have been received by Treasurer Acton, and the settlement of balances in the Clearing House continues to be made as usual, without the offer, and consequently without any refusal, to accept silver certificates. The movement of merchandise in some respects has been accelerated both in this market and in the West, but there is no activity. The slight improvement in prices sometimes noticed, there is reason to believe, will become more pronounced as the season advances. In the dry-goods jobbing trade there has been a fair distribution, and from this time forward, according to all precedent, there will be more animation. In several of the staple commodities speculation has been active, under the influence of war rumors and the imposition by France of higher duties on wheat. Both wheat and corn advanced 2¢ @ 3¢ a bushel, and receded as suddenly on the receipt of more pacific advices. There was no real revival of the export trade, and estimates by a Western authority of an invisible supply of wheat of 162,000,000 bushels on March 1, against 119,000,000 bushels last year, and a total supply in America, including flour as wheat, of 243,000,000 bushels, against 195,000,000 bushels, tended to depress prices. Exports of corn from the Atlantic ports were more moderate. The total exports of cotton since September 1 have been 3,182,000 bales, against 3,052,000 in the corresponding period last year.

The Stock Exchange market has been irregular. The reduction of the New York Central dividend from 1 1/2 to 1 ¢ for the last

quarter and the suspension of the Lake Shore dividend had a depressing effect, but on Thursday the market rallied under the lead of Lackawanna and Pacific Mail. Rates on grain and provisions east-bound from Chicago were reduced from 25¢ to 20¢ @ 100, despite the protests from several prominent members of the pool. The demoralization of freights on the Wabash system, comprising nearly 3000 miles of road, was also among the adverse influences. On Saturday, as on Monday, Lackawanna was a special feature, touching 109 1/2, being largely oversold. On Tuesday the latter dropped suddenly to 105 1/2, unsettling the whole list. Plans for the reorganization of West Shore had no definite result. Cables to-day reporting weakness in securities and consols declining had little effect other than advancing wheat 1¢ @ 1 1/4¢. Quotations are as follows: New York Central, 91 1/4; Lake Shore, 64 1/2; St. Paul, 74 1/4; Northwestern, 95 1/2; Lackawanna, 105 1/2; Western Union, 60 1/2; Burlington, 124; Union Pacific, 48; Pacific Mail, 61 1/2; Missouri Pacific, 90 1/2; Delaware and Hudson, 79 1/2; Louisville, 32 1/2; Jersey Central, 40 1/2; Northern Pacific preferred, 43 1/2; Consolidation Gas, 94 1/2.

Large lots of trade dollars have been purchased for export to China at 84¢.

United States bonds closed as follows:

U. S. 3 per cents.	Bid.	Asked.
U. S. 4 1/2, 1891, coupon	101 1/4	101 1/2
U. S. 4 1/2, 1907, coupon	111 1/4	112
U. S. 4 1/2, 1907, coupon	122 1/4	123 1/4
U. S. Currency 6s, 1895	135	—
U. S. Currency 6s, 1896	137	—
U. S. Currency 6s, 1897	139	—
U. S. Currency 6s, 1898	133	—
U. S. Currency 6s, 1899	134	—

The most striking feature in the weekly bank statement is an expansion of \$3,793,800 in loans, affording positive evidence of increased mercantile activity. Of specie there was a gain of more than \$2,000,000.

As a result of all the changes the reserve now stands at \$47,385,100, as against \$12,820,675 at the corresponding date last year. In the local money market there is no change. Call loans are 1 @ 2 ¢, and mercantile paper as heretofore. In Chicago there is a marked increase in the demand for money, attributed to movements in staple merchandise.

The imports of foreign merchandise at the port were comparatively large, the total for the past week being \$8,091,452, of which \$5,892,414 represents general merchandise and the remainder, \$2,199,038, dry goods. Since January 1 they aggregate \$71,529,403, compared with \$86,217,532 for the corresponding period of 1884. There was a fairly good export movement of domestic produce from this port during the past week, the shipments aggregating in value \$6,586,972, against \$5,339,440 for the same week last year. Since January 1 they amount to \$66,222,095, compared with \$58,891,272 for the corresponding period of 1884.

According to the Custom House report the imports of specie at this port for the week were \$702,359, making a total since January 1 of \$4,106,958, against \$1,069,823 for the same time in 1884. The exports of specie for the week were \$510,858, making a total of \$6,156,843, as compared with \$12,000,000 for the same time last year.

The aggregate exchanges of clearing houses throughout the United States indicate more business activity than for some time past, especially considering the fact that last week comprised only five business days, but the volume of trade is considerably less than one year ago. The total decrease was 33 ¢, but outside of New York only 6 1/2 ¢. New York decreases 40 ¢; Indianapolis, 37 ¢; Pittsburgh, 28 ¢; Lowell, 25 ¢; Philadelphia, 19 ¢; St. Louis, 17 ¢; and Chicago 15 ¢. Memphis increases 43 ¢; Kansas City, 23 ¢; Milwaukee, 15 ¢, and Boston 11 ¢.

Business failures for the week numbered 277, as compared with 283 in the previous week.

The posted rates for bankers' sterling remain unchanged at \$4.84 for 60-day and \$4.87 for sight. The market is heavy. Respecting the Bank of England rates of discount the London Economist of February 28 says: "In an unsettled time such as this, the bank should seek to keep itself in a position of strength, and, while it is not desirable that the 4 ¢ rate should be maintained a day longer than is necessary, the directors are quite warranted in refraining from making any reduction until they can see a little more clearly ahead."

The two oil exchanges of this city have voted to consolidate, and an election of officers for the new organization will take place on Monday. The Produce Exchange will begin speculative dealings in oil on the 16th inst. The Electric, Manufacturing and Miscellaneous Exchange has decided to disband.

Apropos of the silver question, we referred last week to a pamphlet bearing the imprint of the New York Clearing House, assumed to be from President Coe, of the American Exchange Bank. The writer claims in the first place that the reserves of the New York banks are now superabundant for all possible demands of business, as they include over \$100,000,000 of gold coin, \$20,000,000 to \$30,000,000 of foreign exchange convertible into gold at pleasure, and some \$40,000,000 of legal-tender notes also convertible into the same coin. With this as the basis, the suggestion in brief is that the Clearing House, if the necessity arises, deal with two currencies instead of with one, as now—as between the banks and their customers gold or its representative alone be used, but in the exchanges with the Government the money received from it be in no case merged into that which passes between the banks, but be set apart and treated as a

special fund to be paid over to the banks interested, in the same kind of money received on their behalf. If necessary, the more effectually to eliminate the transactions of the Government from those of the banks it is suggested that the Treasurer withdraw altogether from the Clearing House. Under this plan, therefore, there is no refusal of silver certificates whatever; so the law is obeyed, while at the same time the business of the country will be secure, and values of property and service not be deranged by the compulsory use of a mere money token, worth only about 80¢ on a dollar.

Respecting freights to the Pacific, a Chicago dispatch says: "The following rates @ 100 lb will soon go into effect on business between the points named and the Pacific Coast:

Class.	Chicago.	St. Louis.	Mo. River points.
1.	\$400	\$383	\$360
2.	320	307	280
3.	240	230	210
4.	220	211	198
5.	200	192	175
6.	180	172	158
7.	160	153	140
8.	140	134	123
9.	120	115	105
10.	100	96	88

Commissioner Fink announces the withdrawal of all rates between the Atlantic seaboard and Pacific Coast points. Traffic destined to those points will hereafter be rated at the established west-bound tariff rates to Chicago and Mississippi River points, and will be governed by the trunk-line classification.

New York Iron Market.

American Pig.—In some quarters a tendency to buying more liberally is reported. This, of course, is relative only, and refers to the fact that where some consumers were taking in lots of 25 or 50 tons at a time they now order 100 tons or more. There has not, therefore, in any way, been an abandonment of the policy of buying strictly for immediate requirements, but in the aggregate the sales of Iron are fair.

Some of those who are placing small lots of Southern Irons complain that there is much delay in the delivery. During the week one firm here reports the placing of 1000 tons of Chattanooga, Tenn.; 1000 tons of Rising Fawn, Ala., and 850 tons of Victoria, Va., Foundry Pig for delivery during the next three months, with some additional business pending. We continue to quote standard brands of Lehigh and North River Irons, tidewater delivery, as follows: No. 1 X Foundry, \$18 @ \$19; No. 2 X Foundry, \$17 @ \$18; Gray Forge, \$16 @ \$17. The outside figure is asked for special brands. Outside brands sell for 50¢ @ \$1 less than our quotations.

Scotch Pig.—The market has been quiet and dull, arrivals for the week aggregating about 600 tons. Nominal quotations for 5 and 10 ton lots are as follows: Coltness, \$21.50 to arrive; Gartsherrie, \$21 to arrive, \$22 from yard; Shotts, \$21.50 to arrive, \$22 from yard; Langloan, \$21.50 to arrive, \$22 from yard; Carnbroe and Glenarnock, \$19.50 to arrive, and \$20.50 from yard; Summerlee, \$20.50 to arrive; Dalmellington, \$19 @ \$19.25 to arrive; Eglinton, \$18.50 @ \$19 to arrive; Clyde, \$19 @ \$19.25 to arrive. On large lots concessions are made.

Bessemer Pig and Spiegeleisen.—We note the sale of 1000 tons of Cleator Hematite Pig to a Pittsburgh open-hearth Steel works, for delivery during the next six months, at \$19 at tidewater. Domestic Bessemer is selling at \$16 @ \$18, delivered at Steel mill, according to quality, no business of magnitude having been done during the week. In Spiegeleisen the sale of a lot of 1000 tons of 20 ¢ at \$25 ex-ship is reported. Higher figures are now generally asked. There have been a number of sales, too, of Ferromanganese.

Bar Iron.—Bar Iron is lacking in strength. Competition is sharp, some of the mills being anxious to obtain orders. There is a little weakness, too, in the store prices, our quotations being occasionally shaded. The following range represents quotations: Common Iron at mill, 1.4¢ @ 1.6¢; from store, 1.6¢ @ 1.9¢; Best Refined at mill, 1.65¢ @ 1.9¢; from store, 1.85¢ @ 2¢.

Structural and Shaped Iron.—The week has been a quiet one, no business of any consequence having been closed. The association held another meeting at Philadelphia on Monday to discuss the question of Angles and Girders. There is considerable talk of Foreign Beams at concessions, but there have not been any sales, so far as we can learn. Angles continue low in large lots. Quotations for small lots continue to be, nominally, as follows: Angles, from store, 2.2¢ @ 2.6¢; Tees, from store, 2.8¢ @ 3¢. Beams and Channels are 3¢ on dock for all orders.

Plates.—There has been very little new business, and the low quotations recently made still rule. It is reported that an order for several hundred tons of Steel Plates has been taken by a Pittsburgh mill at 3 1/4¢ here. Usual prices of Iron Plates are as follows: Common or Tank, 2¢ @ 2.1¢; Refined, 2 1/2¢; Shell, 2 1/2¢ @ 2 3/4¢; Flange, 3 1/2¢; Extra Flange, 4¢ @ 4 1/4¢. For small lots of Steel Plates the quotations are as follows: Ship, 2 1/4¢ @ 3¢ at mill; Tank, 3¢ @ 3 1/2¢ on dock; Boiler, 3 1/2¢ @ 3 3/4¢ for Shell, 4¢ @ 4 1/2¢ for Flange, and 4 1/4¢ @ 5 1/2¢ for Extra Flange and Fire-box.

Sheet Iron.—Prices continue low, and some of the smaller mills are competing for business, and are making concessions. Some very sharp complaints are made concerning the quality of some of the Sheet Iron placed on the market. We quote prices of Sheet Iron in our list of New York Wholesale Metal Prices.

Merchant Steel.—There has been no change, the market remaining quiet, with a

fair business doing from store. Nominal quotations are as follows: American Tool Steel, 7 1/4¢ @ 10¢; Tool Steel of special grades and finer qualities, 12¢ @ 20¢; Crucible Machinery, 4 1/2¢ @ 6¢; Spring and Tire, 2 1/4¢ @ 3 1/4¢; Open-Hearth Machinery, 3¢ @ 3 1/4¢, and Bessemer Machinery, 2 1/4¢ @ 3¢; English Tool, 13 1/2¢ @ 15 1/2¢.

Steel Rails.—Altogether about 10,000 tons of Steel Rails have been placed, and there are some round lots now on the market which are very sharply competed for. We cannot trace to any reliable source the statement in a leading daily newspaper that Rails have been sold during the past few days as low as \$25.50. It is stated, however, that \$26 has been accepted for one lot. We quote \$26.50 @ \$27.50 at mill.

Steel Wire Rods.—There has been a little more inquiry, and spot lots are obtainable at \$42.

Steel Blooms and Billets.—For 3 x 3 inches, American mills ask \$30.

Old Rails.—We hear of the sale of 500 tons at \$17, delivered at Suspension Bridge, and of an additional lot of 500 tons for Western delivery. There is a better demand, due to the fact that some of the consumers are temporarily short, while a good deal of old material held by the railroads cannot be moved at present. We quote \$16.75 @ \$17.50.

Old Wheels.—We are reported the sale of 500 tons of Old Wheels at Buffalo at \$16.50, and of a small extra choice lot at \$19. Old Wheels are freely offered at \$16 here, but bids do not go higher than \$15.50.

Scrap.—A lot of picked strictly No. 1 Wrought Scrap has been placed at \$19. From yard \$18.50 is asked and \$18 bid.

Messrs. Charles G. Eckstein & Co., of No. 32 Liberty street, this city, inform us that the Actien-Gesellschaft Eisen-Industrie zu Menden und Schwerte, of Schwerte a. d. Ruhr, Germany, manufacturers of Iron and Steel Wire Rods of every description, have entrusted them with their agency for the United States and Canada.

Metal Market.

Copper.—Nothing of special interest has occurred in this market during the week; the little that is done in Lake Superior Copper is at 11¢ @ 11 1/8¢, and in other brands 10 1/2¢ @ 10 3/4¢. The extraordinary decline which has been going on during the week in Chili Bars in London is, of course, the chief subject of comment in the metal market. They ranged as follows: March 5, £47; March 6, £46. 17/6; March 7, the same; March 9, £46. 15/; March 10, £46. 5/ @ £46. 10/; and this morning, £46. Spanish export of Pyrites in 1884, 617,958 tons, against 564,565 in 1883 and 571,441 in 1882; of Ingot Copper, 19,340 tons, against 23,976 and 22,695. Manufactures may be nominally quoted: Bottoms, 18¢; Braziers, 17 1/4¢; Sheathing, 16¢, and Bolt Copper, 18¢. We are cabled from London this afternoon that the Copper market is a little weaker.

Tin.—A little break has occurred in the London market, where it seems some Tin held by capitalists elsewhere for years is being thrown on the market and realized, much to the annoyance of manipulators for a rise. Yesterday Straits Tin still came £76. 15/; spot, this morning it was cabled £76. 10/, while three months' dropped from £77. 10/ yesterday to £77. 2/6 to-day, a notable decline, for some 10 days ago three months' still stood £79. We have been unsettled here, and cash Straits Tin can be had to-day for 17 1/4¢, futures at 17¢. Mr. Chas. Nordhaus, East India agent, 13 Cedar street, New York, furnishes us the ensuing valuable monthly statistics:

	Tons.
February 1, stock in New York and Boston	1,300
February arrivals	700
Total	2,000
February consumption	500
March 1, stock	1,500

Altogether, 500 tons from the Straits Settlements, 500 from Australia, and 500 from Europe.

March 1, visible supply 2,300 tons. We receive per cable from London this afternoon the following: "Markets weaker, Straits Ingot, spot, £76. 15/ @ £77. 5/, and futures £77. 10/ @ £78. 5/." Tin Plates.—There has been a fair jobbing demand, but not much life in the market, and prices are unchanged, as follows, for ordinary brands, large lines, 7" box: Charcoal Bright, \$4.00 @ \$5.25; do. Ternes, \$4.45 @ \$4.60; Coke Tin, \$4.40 @ \$4.

Trade Report.

Philadelphia.

Office of The Iron Age, 220 South Fourth St.,
PHILADELPHIA, March 10, 1885.

The tone of the market shows improvement, although there is not an article on the list on which an advance can be quoted. The average of the week's transactions, however, has been in sellers' favor, concessions having been less frequent and in many cases not granted at all. The anxiety for business is still very great, nevertheless, but it is thought that the size and number of orders are gradually increasing, and that after a while there will be enough to satisfy all parties. Until that period arrives there is very little chance for better prices, but the conviction is becoming general that the extreme limit of depression has been reached, and some progress made toward a reaction.

Pig Iron.—A fair, average demand is reported at quoted rates, with offers for considerable quantities at figures slightly below those generally ruling. Sellers show a fair degree of firmness, however, and, as standard brands are largely under contract, there is no disposition to make concessions. There is a wide range of prices, nevertheless, owing to the introduction of new brands, but taking as a basis standard makes of Lehigh Irons at \$16, \$17 and \$18, delivered, the market may be called steady to firm. New brands are in a different position, and while Alabama Irons can be bought "ex ship" at \$1 below the rates quoted for Lehigh Irons, and other new brands at intermediate figures, it cannot fairly be claimed that they are any cheaper in reality than those quoted at \$16, \$17 and \$18. There can be no doubt, however, that they act as a drag on the market, and until there is a much heavier demand than at present it would be entirely out of the question to think of an advance. This is pretty well understood by both buyers and sellers, and, as long as outside brands can be had as at present, there will be no disposition to place orders much in advance of requirements. Should there be a demand for Southern Irons nearer home, this market will doubtless feel the effect immediately, and it is a contingency by no means impossible. There is certainly no money in the business at prices they have been realizing, and, in the event of a demand from other sources, shipments in this direction would cease immediately. Under these conditions a very slight change might develop important influences, and, while there are no indications of anything of the kind at the moment, it will do no harm to suggest possibilities. For the present buyers manifest no great interest in the market beyond providing for their immediate needs, so that the majority of sales are in small lots at the prices already quoted, with 50¢ @ \$1 more on special grades.

Foreign Iron.—There is some demand for special brands of Bessemer, and sales at about \$19.25 at tide. Spiegel has been sold at about \$25 for 1000 tons of 20%, but the market is somewhat limited and prices irregular.

Muck Bars.—There is rather more demand and prices are firmly maintained. Sales at \$27 @ \$27.50, delivered, for the best qualities, and \$26 @ \$26.50 for a medium grade.

Blooms.—Steel Blooms are in fair demand at about \$31 @ \$32 for Nail Plate and \$35 @ \$36 for Plate and Sheet Blooms. Other descriptions are dull, and for the best makes quoted as follows: Charcoal Blooms at \$50 @ \$52; Run-out Anthracite, \$43 @ \$44; Scrap Blooms, \$35 @ \$36; Northern Ore Blooms, \$35.

Bar Iron.—There is some slight improvement in this department, but it has had little or no effect on prices, which are still at very unremunerative figures. There is more inquiry, however, and with a fair increase in the demand prices will doubtless show improvement. The wide range in prices is due in a large measure to the disparity in quality. Old Rail Iron being offered at 1.5¢ @ 1.6¢, a medium to good quality at 1.65¢ @ 1.75¢ and strictly Refined Iron at 1.8¢. Skelp Iron is in more active request, several good-sized orders being on the market, with sellers at from 1.8¢ to 1.85¢; actual sales on private terms.

Structural Iron.—An improved feeling is noticeable in this department, owing to a gradual accumulation of orders within the past week or two. Some of the larger concerns have filled in vacancies for several weeks to come, and, with more business believed to be near at hand, the outlook is considered decidedly more cheerful than it has been for some time past. Prices are very low, however, and in this respect no improvement can be reported, although manufacturers are getting in good shape for it if the demand continues as expected. Mean-time small lots are quoted as before, say, 2¢ @ 2.1¢ for Angles, 2.1¢ @ 2.15¢ for Bridge Plate, 2.5¢ for Tees, and 3¢ for Beams and Channels.

Plate and Tank Iron.—There has been rather more business than for some time past, and several moderate-sized orders are still on the market. Prices are a shade firmer. An attempt was made to secure a slight advance, but orders taken so far were at the same figures as before, say 1.9¢, de-

livered, for Tank Iron in lots of 100 to 200 tons each. Manufacturers are now quoting 2¢, and with anything like a fair demand it is probable that some little advance can be secured, although there is still a good deal of competition for orders of that class. Prices remain about as follows: Ordinary Plate, 2¢; Tank, 2¢ @ 2.1¢; Shell, 2.5¢; Flange, 3.5¢; Fire Box, 4.25¢; Steel Plates, Flange, 3.5¢ @ 3.75¢; Fire Box, 4.25¢.

Sheet Iron.—There is more business doing and a little more steadiness in prices, but it is a difficult matter to secure any advance. There is a general impression that bottom figures have been reached, however, and the tendency is undoubtedly toward improvement. Meanwhile, quotations in ordinary cases are about as follows:

Best Refined, Nos. 26, 27 and 28.....	3 1/4¢
Best Refined, Nos. 19 to 25.....	3 1/4¢
Common, 1/2¢ less than the above.....	3 1/4¢
Best Bloom Sheets, Nos. 26 to 28.....	5 1/2¢
Best Bloom Sheets, Nos. 22 to 25.....	4 1/2¢
Best Bloom Sheets, Nos. 16 to 21.....	4 1/2¢
Blue Annealed.....	4 1/2¢
Best Bloom, Galvanized, discount.....	5 1/4¢
Second quality, discount.....	60¢
Common, discount.....	60¢

Wrought-Iron Pipe.—There is a somewhat better feeling, although prices show no improvement. In ordinary cases discounts are about as follows: Butt-Welded Black Pipe, 50%; Butt-Welded Galvanized, 40%; Lap-Welded Black, 67 1/2%; Galvanized, 50%; Boiler Tubes, 60%.

Steel Rails.—There is an active demand for both small and medium sized lots, under which prices are decidedly firmer. The usual asking price is from \$27.50 to \$28 at mill for Ordinary Patterns; \$29 for 40's, \$30 for 35's, and \$31 for 30's. A large amount of business could be secured at concessions of 50¢ @ a \$1 per ton, but manufacturers have a considerable amount of work on hand, and are not inclined to shade prices.

Crop Ends.—There is some inquiry for English Crops, with bids of \$18 @ \$18.50 for prompt shipments. Sellers ask \$19.50, and appear to be firm at that figure, although buyers are not inclined to advance their bids at present.

Old Rails.—There have been no sales during the week, although buyers appear to be anxious to get Rails at a price about equal to \$17 @ \$17.50, Philadelphia. Sellers ask \$18.50, however, and at present do not appear to be in a position to accept less, as they are held at outside points at figures which prohibit anything below \$18.50.

Old Material.—The demand is improving, and prices are a shade firmer. Sellers ask outside rates, with an active demand at medium and inside figures as follows: No. 1 Wrought Scrap, \$17 @ \$18; No. 2 do., \$12 @ \$13; Horse Shoes, \$22 @ \$22.50; Turnings do., \$13 @ \$14; Old Car Wheels, \$15 @ \$16; Old Steel Rails, \$15.50 @ \$16; Fish Plates, \$22; Cast Scrap, \$13.50 @ \$14; do. Turnings, \$9.50 @ \$10.

Nails.—The demand is well maintained, and prices are steady at \$2.30 for Iron and \$2.40 @ \$2.45 for Steel Nails.

Pittsburgh.

Office of The Iron Age, 77 Fourth Avenue,
PITTSBURGH, PA., March 10, 1885.

Inquiry fails to discover any improvement in the general Iron situation during the past week. A more hopeful feeling is being developed, owing in large part to the more favorable weather, and some of our most conservative manufacturers look for an improved demand for all kinds of Finished Iron within the next few weeks. One of the most unsatisfactory and discouraging features at present is the fact that the railroads generally have not been doing any good for some time past; many of them are unable to meet the interest on their bonds; quite a number have gone into the hands of receivers recently, and others, it is expected, will be placed in the same position before long. The railroads are the great consumers of Iron and Steel, and so long as they are not in a prosperous condition not only will construction of new roads be very much restricted, but the old corporations will make just as few improvements as they can possibly help. This accounts for the fact that there is now so little inquiry for Railroad Supplies. The indications at present are that but comparatively few miles of new railroads will be built this year.

There is nothing new in labor circles, excepting that the river Coal miners are again out on a strike; they have been getting 2 1/2¢ per bushel and now demand 3¢. The operators say that the Coal trade is exceedingly dull, and that they cannot and will not accede to the demands of the miners. Of the 10,000 miners in the Pittsburgh district, it is believed that about seven-eighths are either out or will go out on a strike. If the miners persist in their demands a strike is inevitable, as the operators say the Coal trade never was in a worse condition than it is at present.

Iron Ore.—There is no improvement to note in the Ore trade. Private advices from Cleveland report a sale by the Republic Company of 20,000 tons of Republic Ore at \$5.50, which, if we mistake not, shows a further reduction of 25¢ per ton. It is very evident that, as long as matters remain as they are and have been for some time past, consumers will continue to refuse to anticipate future wants.

Pig Iron.—There has been no important change in the position of the market here the past week; the demand is increasing somewhat, as is also the consumption, but prices are no better, and the latter is the

most important of the two to producers. There have been several sales of hypothecated Iron within the past few weeks, the effect of which has been of a depressing character. These Irons, consisting of mixed lots, good, bad and indifferent, were placed in the hands of brokers and ordered to be sold at the best price to be obtained. When an attempt is made to sell, consumers quote the low prices at which these hypothecated Irons were sold at, and want straight lots of standard brands at the same price, although, at the same time, they will make a difference of from \$1 to \$1.50 per ton in favor of the latter. Some of our city furnaces still quote their No. 1 Forge at \$15.50, cash, to \$16, four months, but consumers have no trouble in obtaining Irons just as good for 50¢ per ton less. In regard to the near future there is a diversity of views, but it appears to be generally conceded that hard pan has at last been reached. Quotations may be fairly given as follows:

Neutral Gray Forge.....	\$15.00 @ \$15.50, 4 mos.
All-Ore Forge.....	16.50 @ 17.00, 4 "
White and Mottled.....	14.00 @ 14.50, 4 "
No. 1 Foundry.....	17.50 @ 18.00, 4 "
No. 2 Foundry.....	16.00 @ 16.50, 4 "
Cold-Blast Charcoal.....	25.00 @ 27.00, 4 "
Warm-Blast Charcoal.....	17.50 @ 22.00, 4 "
Bessemer Iron.....	17.50 @ 18.00, 4 "

We can report a sale of Gray Forge at \$15, four months; All-Ore do., \$16.50, four months, and small lots of Bessemer at \$18, four months.

Muck Bar.—There appears to be no demand, and in the absence of sales we continue to quote, nominally, at \$27 @ \$27.50, cash.

Manufactured Iron.—There is an increasing demand, but as yet very few, if any, of the mills are working up to anything like their full capacity, while prices show no improvement whatever, and this latter is the most discouraging feature of the two. Manufacturers complain more of unremunerative prices than a lack of business. A millman from Shenando Valley, who was in the city on Saturday, reports business out in his section fully as bad as, if not worse than, it is here. We continue to quote prices on a basis of 1.65¢ @ 1.75¢ rates for Bars—that is, for first quality Iron. It is expected that orders from the Northwest will commence to come forward pretty freely within the next few weeks, as stocks out in that section are known to be very much reduced.

Nails.—The demand for Iron Nails continues light for the season, which may be attributed to the fact that jobbers are holding back to see whether or not the recent advance in price is likely to be maintained. So far as we can learn, manufacturers are holding firm, refusing to sell below regular card rates, and it is expected that there will be a considerably improved demand within the next few weeks. We continue to quote at \$2.25, 60 days, 2¢ off for cash, with a rebate of 10¢ per keg on car lots and upward. Some of the Steel-makers claim that they are well supplied with orders, and it is evident that they are making a strong effort to supplant the Iron Nails in the leading markets both East and West.

Wrought-Iron Pipe.—There is possibly a little more inquiry, but business continues dull and prices unsatisfactory. It is expected, however, that orders will commence to come forward more freely within the next few weeks. Discounts on Black Butt-Welded Pipe, 47 1/2%; Galvanized do., 40%; on Black Lap-Welded Pipe, 1 1/2-inch and larger sizes, 65% @ 67 1/2%; Galvanized do., 47 1/2% @ 50%. For Selected Pipe, or Pipe cut to specified lengths, discount 5% less than rates above quoted. Discount on Boiler Tubes, 60%; 2-inch Oil-well Casing, 11¢ per foot, net; 5 1/2-inch Oil-well Casing, 37¢ @ 38¢ per foot, net.

Steel.—For some kinds of Steel there is a fair demand, but as a rule trade is dull for the season, and but few, if any, of the mills are running full. Best brands Refined Cast Steel, 9¢; do. Crucible Machinery, 4 1/4¢; Open-hearth and Bessemer, 3¢. Steel Nail Slabs—for which there is pretty good demand—firmer, and prices are higher; we now quote at \$30 @ \$30.50 per ton, free on cars at works of maker.

Steel Rails.—Continue very dull; no sales reported, and there is but little inquiry. There may be an improvement later on in the season, but the outlook at present is not very encouraging. In the absence of sales we continue to quote Heavy Sections at \$27, cash, at mill.

Old Rails.—The last sale of Old Iron Rails we hear of for immediate delivery was at \$19.50, which shows a decline of 50¢ per ton, and consumers look for a still further reduction soon. Old Steel Rails for immediate delivery may be quoted at \$16 @ \$17, according to lengths.

Railway Track Supplies.—Demand continues light, and the outlook for an improvement soon is not very promising. Prices nominally unchanged, as follows: Spikes, 2¢, 30 days, delivered; Splice Bars, 1.65¢ @ 1.75¢; Track Bolts, 2.35¢ @ 2.4¢ with Square and 2 6¢ @ 2.65¢ with Hexagon Nuts.

Crop Ends.—New Steel Rail Ends continue scarce, and, with considerable inquiry, prices are firm and higher. We quote for immediate delivery at \$18.50. Steel Bloom Ends are in scant supply and wanted; may be fairly quoted at \$18.

Scrap.—There is a little more doing, but prices continue weak. No. 1 Wrought Scrap, \$16 @ \$17 per net ton; Wrought Turnings, \$13 @ \$14; Old Car Axles, \$24 @ \$25; Cast

Borings, \$11 @ \$12, gross ton; Old Car Wheels, \$16, gross.

Coke.—Blast Furnace Coke remains unchanged at \$1.10 per ton, free on cars at ovens; 70% of the ovens in the Connellsville Coke regions are still in operation.

Window Glass.—Trade continues dull, but an early improvement is being looked for. No change in prices. Discount on Single Strength, in car lots, 70 and 5%; do. Double Strength, 70 and 10 and 5%.

Coal.—Our river Coal trade continues in an exceedingly unsatisfactory condition; it never was worse, and the outlook is not favorable for an early improvement.

Chicago.

Office of The Iron Age, 36 and 38 Clark St.,
Cor. Lake St., CHICAGO, March 9, 1885.

There is little or nothing new to report. The trade is slowly recovering volume and tone, lost during the snow blockade, but is extremely sensitive yet. We are suffering now from delays on railroads, occasioned by their late trouble, especially on east-bound freight, the switches being full of loaded cars which the utmost efforts of the freight department find it almost impossible to dispose of, as the streets are in such condition from snow and ice that teams can haul but one half to two-thirds their usual loads.

Hardware.—General business in Hardware has largely increased during the past week, notwithstanding the unfavorable weather in the Northwest. While prices are fairly steady, cutting in some lines prevails, and will likely continue until manufacturers and jobbers realize the necessity of putting their traveling salesmen under better control, a movement which has recently been introduced in the West, to the special advantage of dealers in this city. Collections are reported as improving, and the prospect for a good spring trade is very encouraging.

Barb Wire.—The continued improvement in the demand for Barb Wire has caused licensed manufacturers to hold their prices firm during the week. An extra 1/4¢ on Two-Point is obtained on account of the excessive call on this class of Wire. Jobbers' price on Four-Point, Painted, is 3 1/2¢, and on Two-Point, Painted, and Four-Point Hog Wire, 4 1/2¢, and on Two-Point Hog Wire, 4 3/4¢. Galvanized 1¢ additional on these prices, with an 1/8¢ off in carload lots. The conditions of the market make these prices firm, and little or no cutting is reported.

Nails.—The position of the market is similar to that of a week ago, and quotations are \$2.25, 2¢, 60 days, in carload lots, and \$2.30 in small lots. There are elements, however, cropping out which make a change in the conditions of the market not improbable. The increased demand for Steel Nails, which makes them scarce, while Iron Nails accumulate in the same proportion, must result in an advance in the price of Steel Nails or a decline in the price of Iron Nails. The prices at some points are now the same, which, it is said, cannot long continue without generally disturbing present prices. Steel Nails in this market are held at 5¢ per keg advance on Iron Nails, and obtained by all dealers and makers. The demand on both classes has been slightly off during the week, caused by more bad weather.

American Pig Iron.—The market for the week shows up very much as it has done for some time past. The call for small lots is fair, but there is no disposition to buy largely, and we hear of few inquiries or sales of round lots. A trifle more Iron has been sold thus far in the month of March than during the same time in January and February—not because there is any activity in trade now, but for the reason that it was excessively dull at that time. But, admitting that there is a better demand, it still cannot be said that there is sufficient to indicate a revival in business that is likely to prove permanent. An encouraging feature in the market is the disposition on the part of railroads to let contracts for building cars, which thus far exceed all contracts placed for cars during the same length of time in the previous year. Pig-Iron dealers are hopeful of good results in the market from railroad improvements, though there may not be enough to stimulate prices, which at present are only fairly firm, and are a probable inducement to companies to repair and increase their rolling stock. Lake Superior Charcoal Irons are steady at former quotations; not enough demand to cause a cut in prices to obtain the orders, but it is probable that a large buyer could contract at lower figures than are now prevailing. In Southern Irons some of the furnaces have advanced their prices 50¢ a ton, while others seem willing to accept quotations and at times shade figures for the purpose of making a sale. In all respects quotations given last week are unchanged to the general buyer, and only some exceptional transactions would receive consideration at figures differing from those last named.

Manufactured Iron.—Business in all classes of Manufactured Iron remains about the same as has been indicated in our previous report. Trade is at the moment entirely subservient to the conditions of the weather, and will so continue until it can be conducted without interruption from such influences. Everything in actual transactions points to an early improvement in trade among the branches of Irons that go directly into consumption, and dealers are waiting and hopeful, rather than discouraged. The

season will undoubtedly be a late one, but the low prices which prevail are regarded as a strong inducement to builders, and it will be more likely only crowd the business into a shorter period without detracting from the gross volume. No changes are reported on any of the prominent classes during the week, and prices are therefore announced steady as then reported. Stocks in some cases are light, but in a general way quite sufficient to meet all current demands.

Chattanooga.

Office of The Iron Age, Carter and Ninth Sts.,
CHATTANOOGA, March 9, 1885.

As advertised, the sale of the Lookout Rolling Mill took place on Thursday last, and brought the sum of \$29,500, spot cash. The property was bid in by some of the parties already interested, for the purpose of clearing the titles, which could not otherwise be perfected. The price was considered far below its real value. It will now be put in commission by its present owners, or disposition made of it to parties who will operate it. It is a fine plant for Bar Iron and Railroad Spikes, and there is money in operating it at the present prices for raw material. The clouds that have been hanging over our railroad interests in the shape of adverse legislation appear to be clearing away to some extent. Our legislators are changing their tactics in regard to the railroad commission laws, and, while not willing to give up entirely, are taking much more sensible and liberal ground in regard to this particular class of legislation. Taking all things into consideration, a number of events have transpired that have given our business interests a better feeling with reference to the future.

Pig Iron.—The market continues steady, with sales fully up to the output of the furnaces, and there is but little stock accumulating. There is a tendency among quite a number of our Southern furnaces to run on light-colored Irons. While these Irons are popular with foundries, especially those who are engaged in making light castings such as stove plate, hollow-ware, &c., they are not so well adapted for the forge. Some of the complaints that have been made of our Irons have recently come from this cause, but improvements are being constantly introduced. The ores are more carefully selected, more pains are taken in the making of the coke, and the foundries are improving in their knowledge of the material that they are working, and are able to handle their Irons much better and with more certainty than they were in times gone by. A small cloud is appearing in the distance in regard to freights. Some three weeks ago one of the leading lines proposed to put the rates to New York, Boston and Philadelphia at \$3.25 per long ton. This was not done, however. There is a disposition on the part of some of the lines to cut rates generally, but whether it will apply to Pig Iron remains to be seen. The present rates to all the principal manufacturing points are entirely satisfactory. The rate is \$3.75 to the East, and under it the furnaces have thus far marketed in Eastern cities a little over 12,000 tons, with something over 7000 tons now under contract, and, while a few might be benefited by the lowering of rates, it would certainly destroy that stability and regularity which have heretofore prevailed with our lines, and which in the future would work to the disadvantage of the Iron interests of the district. Prices remain the same, with no change worthy of note. A few small lots of off-grades have been put on the market at conceded prices, but with this exception we quote Gray Forge at \$11.50 @ \$12.25; No. 2 Foundry at \$13 @ \$13.50; No. 1 Foundry at \$14 @ \$14.50; Silvery Gray and American Scotch at \$13 @ \$14.

Hardware.—There is an increased demand for house trimmings of all kinds. The weather is superb, and buildings are being erected in every direction. An advantageous arrangement has recently been inaugurated at this point which is favorable to jobbers further South. Carload lots beyond this point can be stopped here and the shipment split for different parties and forwarded under the through rates and the same billing. In other words, it makes this place a distributing point without further cost.

Railroad Fastenings.—Now that legislators are disposed to meddle less with the railroads, the managers are beginning to feel a little freer in making their estimates for future repairs, and inquiries for Fastenings are coming in more frequently. The large traffic in passengers and freight has, however, no doubt had something to do with the matter, and some of the roads have now concluded to put their lines in good shape.

Scrap.—Is the same, with the exception of Old Rails, which are selling at \$16 whenever there are any sales made. There is nothing doing, however.

Ores and Coke.—Nothing new to report.

Cincinnati.

MARCH 9, 1885.—**Pig Iron.**—The past week has developed some activity in the market; the orders for large and smaller lots are for immediate use, and some encouragement is felt that the business is emerging from under the shadow of the past. Sales reported are all at the figures of last week, as quoted. The dealers are on the alert to capture orders, and their great desire to sell prevents, it is thought, a more firm feeling

as to prices. It is suggested that if the market could have a short rest, by entertaining canvassers to sell withdrawing for a time, consumers would speedily instill some life into the market. The condition of supply and demand on the 1st of March is that stocks are lighter and the demand greater than on the 1st of January. Quotations:

CHARCOAL FOUNDRY.
Hanging Rock, No. 1, \$21.00 @ \$21.50
Hanging Rock, No. 2, 19.50 @ 20.00
Alabama and Tennessee, No. 1, 18.00 @ 18.50
Alabama and Tennessee, No. 2, 16.50 @ 17.00

COKE FOUNDRY.
Ohio and West Pennsylvania, No. 1, 18.00 @ 18.50
Ohio and West Pennsylvania, No. 2, 17.00 @ 17.50
Virginia, Tennessee and Alabama, No. 1, 15.50 @ 16.00
Virginia, Tennessee and Alabama, No. 2, 14.00 @ 15.00

SILVER-GRAY SOFTENERS.
Hanging Rock (Jackson County), No. 1, 18.00 @ 18.50
Hanging Rock (Jackson County), No. 2, 17.00 @ 17.25
Hanging Rock (Jackson County), No. 3, 16.50 @ 17.00
Hanging Rock (Jackson County), No. 4, 15.00 @ 15.50
Others, Nos. 1 to 4, 15.50 @ 16.00

CAR-WHEEL.
Hanging Rock Charcoal, Cold Blast, 26.00 @ 28.00
Hanging Rock Charcoal, Warm Blast, 24.50 @ 25.00
Lake Superior Charcoal, Warm Blast, 22.50 @ 23.00

FORGE.
Charcoal, 17.00 @ 20.00
Coke, 14.00 @ 16.00
Stonecoal, 14.00 @ 15.00

SCRAP.
Cast, Heavy, 100, 25.00 @ 26.00
Old, Light, 100, 23.00 @ 24.00
Old Car Wheels, 100, 16.00 @ 17.50
Old Rails, 100, 17.50 @ 18.00

Above quotations on Pig Iron are on four months' time, 50¢ per ton less for cash. Prices at furnaces are less the freight to this city.

Louisville.

W. B. BELKNAP & Co., Iron and Steel Merchants, Nos. 115 to 121 West Main street, Louisville, under date of March 9, 1885, report as follows: We would like to report the market more favorably, but there is little vitality in it. However desperate the situation may be to the manufacturers, there is no way to improve prices by resolutions until the demand first comes. This has doubtless been retarded by the excessive cold weather which left us scarcely a week ago. Navigation on the Ohio is pronounced resumed, but such heavy ice continues to run as to make it expensive and even dangerous for the boats to run. Besides, some of the main tributaries have not opened up at all. Notwithstanding the unmitigated severity of the winter throughout, Coal has been cheap and plenty, owing to the increased development of mines in the State, both of the western and eastern Coal fields. The display in our exposition here two successive years of specimens of Coal, sections of clear veins 8 feet thick, attracted the attention of everybody, and only this last week some Michigan capitalists have bought a large tract of Coal and timber land near London, Laurel County. Sheet Iron is practically unchanged. There is a fair demand for all except the lightest weights.

Hoops are more active, and there is no talk of advance, and mills seem glad to get orders at present prices. Steel—Demand for the best Tool Steel is increasing and is one of the most encouraging features to be noted. Plow Steels, Finished Shapes, Stocks and that class of material generally are moving fairly, as they should do at this season. Nails—There is a slight movement toward the country, and so far as we can learn, no disposition to cut the last declared card; still we doubt if many new orders are being placed at it, for deliveries of large lots bought in January are being forced upon buyers, many of whom were simply indulging in speculation, and they in turn are endeavoring to get rid of them, to be saved the expense of handling and storage. Not much short of 30 days will answer to test the strength of present figures. While Steel and Iron Nails are nominally the same price, there is nevertheless a difference of 5¢ at 10¢ per keg maintained. Wire—The spring demand for Barbed Fencing is on us in full force, and only the fact that jobbers have anticipated it to a certain extent and laid in fair stocks prevents there being a rush something like last year. The manufacturers seem rather bare of stock, and it is the exception when an order is executed promptly. Staples, Stretchers, Post-Hole Diggers, &c., naturally share the activity of Wire.

General trade is only fair. Steel goods, of course, are going out, but confidence in them was shaken when the association went to pieces in the winter. The heavy advance in Grindstones reminds the luckless "short" of a Wall-street squeeze in Lackawanna. One thing we feel constrained to notice is the inferior goods put out by the most reputable manufacturers. Some whose names have stood as synonyms for superiority have yielded to temptation to meet out prices, and even under their own labels sent out goods of which they acknowledge themselves ashamed. We trust the complaints that we know have been made will lead them to a speedy repentance. There must be a standard of excellence. The honor of maintaining it must always belong to the few.

Imports and Exports.

IMPORTS.

The following were the Imports of Hardware, Iron, Steel and Metals into the Port of New York for the week ending March 10, 1885:

Hardware.	Curley J. & Bro.	Curley J. & Bro.
Becken	Mach'y, pkgs., 5	Mach'y, pkgs., 5
Baker Hermann & Co.	Hdw., cs., 19	Hdw., cs., 19
Hdw., cutlery and guns, pkgs., 20	Drexel, Morgan & Co.	Drexel, Morgan & Co.
Bentley & Hitchcock.	Mach'y, cs., 5	Mach'y, cs., 5
Mach'y, cs., 5	Brown Bros. & Co.	Brown Bros. & Co.
Carpet nails, bales, 25	Burkshaw W. C.	Burkshaw W. C.
Burkshaw W. C.	Cases, 2	Cases, 2
Clark G. A. & Bros.	Mach'y, case, 1	Mach'y, case, 1
Collins & Co.	Axes, cs., 4	Axes, cs., 4

Hillman G. Cutlery, case, 1
Kastor A. Cases, 3
King H. Case, 1
Casks, 4
McCoy & Sanders, Chains, cs., 10
Cutlery, case, 1
Moss F. W. Files, case, 1
Osborne & Burke, Cases, 3
Pitts, Nephews & Co., Revolvers, &c., cs., 4
Schoverling, Daily & Co., Axes, cs., 6
Squires H. C. Guns, case, 1
Sellers W. B. Mds., cs., 2
Smith R. A. C. Bundle, 1
Tagliabue T. Case, 1
Taylor Thos. Cases, 7
Cases, 8
Vom Clef & Co. Case, 1
Wiebush and Culley & Co. Hdw. and cutlery, cs., 37
Iron chairs, cs., 27
Witte John G. & Bro. Mds., pcs., 4
Order.

Iron.
Baring Bros. & Co. Wire rods, bds., 5625
Brown Bros. & Co. Bundles, 1004
Cary & Moen. Wire, coils, 162
Coddington T. B. & Co. Sheets, bds., 377
Sheets, bds., 26
Bundles, 136
Crocker Bros. Spiegel, tons, 30854
Ferro Iron, cs., 94
Irwin Richard & Co. Pig, tons, 100
Lee Jas. & Co. Pig, tons, 100
Lillienberg J. Tin plates, bds., 281
Bars, 1877
Mason John W. & Co. Wire rope, coils, 9
Naylor & Co. Wire rope, coils, 276
Perkins C. L. Ferromanganese, cs., 286
Pierston & Co. Screw wire rods, coils, 922
Stetson Geo. W. & Co. Pig, tons, 300
Tillotson L. G. & Co. Tel. wire, case, 5
Order.

Steel.
Abbott Jere & Co. Cases, 22
Baring Bros. & Co. Wire rods, bds., 4840
Wire, coils, 5533
Cary & Moen. Wire rods, bds., 130
Bundles, 228
Dodge Alfred. Wire, cs., 2
Mds., case 1
Dowling R. F. & Co. Bundles, 45
Friedman & Lauterjung Steelware, cs., 5
Lazard Freres. Rods, bds., 335
Morton, Bliss & Co. Cases, 4
Plates, 75
Moss F. W. Bundles, 87
Bars, 37
Case, 1
Naylor & Co. Wire rods, coils, 867
Rods, 45
Temple & Lockwood. Tires, cs., 4
Wagner W. F. Bundles, 13
Bars, 41
Plates, 16
Cases, 5
Pkgs., 131
Order.

Metals.
Brown Bros. & Co. Bundles, cs., 133
Central Stamping Co. Tin plates, bds., 205
Dickerson, Van Dusen & Co. Tin plates, bds., 281
Downing R. F. & Co. Tin plates, bds., 100
Erie & G. W. Disp. Tin plates, bds., 281
Meriden Britannia Co. Mds., cs., 4
Naylor & Co. Spelter plates, 1991
Phelps, Dodge & Co. Tin plates, bds., 12,117
Tin bks., 2317
Black taggers, bds., 129
Antimony, cs., 50
Taylor, Dowd & Co. Antimony, cs., 50
Order.

Hardware.
Tin plates, bds., 5881
Antimony, bds., 555
Plumbago, bds., 555
Tin ingots, 50
Tin slabs, 507
Antimony, cs., 34
Tin foil, cs., 40

The Imports of Metals, Hardware and Cutlery for the week ended March 6 were as follows:

Quantity.	Value.
410	\$2,943
41	6,134
1	504
5	887
9	444
13	738
3,698	
92	27,572
14	45
14	2,307
4,778	
241	4,778
30	5
115	288
362	14,151
500	2,380
28	3,533
307	31,523
502	409
13	3,659
1	4,353
1	135
9	1,860
172	9,721
16	1,501
4,353	
36,007	1,729
41,756	178,538
121,838	
1,878	
56,007	1,878
50	452

The comparison with previous dates is as follows:

For the week.	10 weeks.	Same week.
92	835	1,075
3	137	186
500	7,187	9,280
4,447	434,355	127,567
41,756	267,233	377,036
121,838	2,504,893	4,109,728

EXPORTS.

The following list embraces the Exports of Hardware, Machinery, Iron, Metals, &c., from the Port of New York, for the week ending March 10, 1885:

Dutch West Indies.
Sew. ma., cs., 4 \$116
Mf. iron, pkgs., 3 22
Hdw., cs., 4 45
Tinware, cs., 4 48
Ptm., gals., 2089 221
Pumps, pkgs., 1 16

Dutch East Indies.
Ptm., gals., 234,300 23,430

Copenhagen.
Wire, cs., 4 150
Ag. imp. pkgs., 5 202
Clocks, pkgs., 3 137
Mach'y, pkgs., 3 22
Hdw., pkgs., 5 123

Hamburg.
Ptm., gals., 1,492,356 113,238
Mach'y, pkgs., 11 349
Ag. imp. pkgs., 175 414
Clocks, cs., 31 925
Sew. ma., cs., 280 8,825
Hdw., pkgs., 15 391

Amsterdam.
Ptm., gals., 364,915 27,505
Hdw., pkgs., 22 776
Clocks, cs., 1 37
Pig. mach., cs., 6 180
Ag. imp. pkgs., 12 650
Pumps, pkgs., 13 308

Tuborg.
Ptm., gals., 306,250 23,350

St. Petersburg.
Hdw., cs., 20 257

Bremen.
Ptm., gals., 527,530 64,300
Tinware, case 1 15
Pig. presses, 5 300
Ag. imp. pkgs., 1727 30,111
Mf. iron, pkgs., 43 3,804
Hdw., pkgs., 2 2,594
Mach'y, pkgs., 27 274

Rotterdam.
Tinware, case, 1 42
Hdw., cs., 130
Old brass, pgs., 3 117

Christiana.
Ag. imp. pkgs., 1 30

Bundles, 183.
Wire, bds., 200
Wheels, 80
Spiegel, kg., 400,000
Spiegel, cs., 154
Pipes, 98
Wire, coils, 302

Steel.
Abbott Jere & Co. Cases, 22
Baring Bros. & Co. Wire rods, bds., 4840
Wire, coils, 5533
Cary & Moen. Wire rods, bds., 130
Bundles, 228
Dodge Alfred. Wire, cs., 2
Mds., case 1
Dowling R. F. & Co. Bundles, 45
Friedman & Lauterjung Steelware, cs., 5
Lazard Freres. Rods, bds., 335
Morton, Bliss & Co. Cases, 4
Plates, 75
Moss F. W. Bundles, 87
Bars, 37
Case, 1
Naylor & Co. Wire rods, coils, 867
Rods, 45
Temple & Lockwood. Tires, cs., 4
Wagner W. F. Bundles, 13
Bars, 41
Plates, 16
Cases, 5
Pkgs., 131
Order.

Metals.
Brown Bros. & Co. Bundles, cs., 133
Central Stamping Co. Tin plates, bds., 205
Dickerson, Van Dusen & Co. Tin plates, bds., 281
Downing R. F. & Co. Tin plates, bds., 100
Erie & G. W. Disp. Tin plates, bds., 281
Meriden Britannia Co. Mds., cs., 4
Naylor & Co. Spelter plates, 1991
Phelps, Dodge & Co. Tin plates, bds., 12,117
Tin bks., 2317
Black taggers, bds., 129
Antimony, cs., 50
Taylor, Dowd & Co. Antimony, cs., 50
Order.

Hardware.
Tin plates, bds., 5881
Antimony, bds., 555
Plumbago, bds., 555
Tin ingots, 50
Tin slabs, 507
Antimony, cs., 34
Tin foil, cs., 40

The Imports of Metals, Hardware and Cutlery for the week ended March 6 were as follows:

Quantity.	Value.
410	\$2,943
41	6,134
1	504
5	887
9	444
13	738
3,698	
92	27,572
14	45
14	2,307
4,778	
241	4,778
30	5
115	288
362	14,151
500	2,380
28	3,533
307	31,523
502	409
13	3,659
1	4,353
1	135
9	1,860
172	9,721
16	1,501
4,353	
36,007	1,729
41,756	178,538
121,838	
1,878	
56,007	1,878
50	452

The comparison with previous dates is as follows:

For the week.	10 weeks.	Same week.
92	835	1,075
3	137	186
500	7,187	9,280
4,447	434,355	127,567
41,756	267,233	377,036
121,838	2,504,893	4,109,728

Coal Market.

There is a good trade in progress, although new orders are held in abeyance somewhat, awaiting the announcement of spring prices April 1. Some dealers report the market scarcely as firm on some sizes as one week ago, while others see no difference. As a whole, the Anthracite trade is in fair condition, and the demand is pretty good. Considerable Coal is wanted East. In fact, stocks everywhere are very moderate. Prices for Broken and Egg, including steam sizes, are \$3.50 @ \$3.65; Pea, \$2.50; Chestnut, \$3.50 @ \$3.60, all alongside. Bituminous Coal is firm at \$3.25, alongside, and prices are well sustained. The new pool rates on Soft Coal are \$2.70 at Baltimore, \$2.95 at Philadelphia, \$3.25 at New York and \$3.50 at Sound and Eastern ports, alongside. The Lehigh Valley Coal Company have just completed negotiations with the Wyoming Valley Coal Company for the lease of the colliery at Port Bowley, near Wilkes-barre, which in 1884 shipped to market 304,000 tons of Coal. The Pottsville Mining Journal says the March allotment will carry the operators along steadily until the first of April, when it is probable that full time will be resumed, as the April allotment is 2,400,000 tons. A number of collieries previously idle have been added to the working force.

The total amount of Anthracite mined thus far in the year 1885 is 3,447,477 tons, compared with 3,751,772 tons for the same period last year, a decrease of 304,295 tons. The total amount of Bituminous sent to the Eastern markets thus far in the year 1885 is 693,225 tons, compared with 663,870 tons for the corresponding period last year, an increase of 29,355 tons.

The Lehigh Valley Railroad Company will begin shipping bituminous coal from the Snow Shoe District, Pa., on the 1st of May. In spite of all assurances to the contrary, the pool prices of soft coal are being systematically cut.

The Pennsylvania Railroad is preparing to make its anthracite collieries hum this year. A large increase in the output is promised. Though fettered as it is by alliances with other producing and carrying companies, it will make the best of the situation.

Foreign Markets.

FRANCE.

PARIS, February 23, 1885.—Metals.—Business in general has been dull, and this has also been the case with Metals, which, nevertheless, been steadily rising. Tin has been improved from 5 to 6 francs per ton. We quote at the close, Copper, weaker at 121.25 @ 125 for Chili Bars; Ingots and Slabs, 191; Best Selected, 192.50, and Pure Corrocoro 193. 190. Tin—Banco, 292.50; Billiton, 315.90; Straits, 313.50; Australian, 314, and English, 311. Lead, 29.50 @ 27.50, and Spelter, 37 @ 38. Iron.—No preparations having yet been made to commence the great public works contemplated, the market here is duller and more depressed than ever. We quote Merchant and Flooring, 13.50 @ 14 francs per 100 kg.; Charcoal, 24; Sheets, 20 @ 25, and No. 18 Wire Nails, 27. Advertisers from Saint Didier are rather more favorable, there being some revival in the demand. The orders are not large, but numerous for reordering stock for the spring trade, and all for immediate delivery. Works there have now a fair start, and they might conclude larger business if they were disposed to shade the price for future delivery a trifle. Coke Merchant is selling there at 14.50 @ 15 francs for Coke, and 16 @ 15.50 Mixed. Not only are the rolling mills busier, but the foundries likewise. Prices have been improved, and there has been less competition for the orders. The Government is buying there to some extent. Wire Nails coming in that locality 25.75, No. 18, and Chains, 49. At Mantes, there is great business at 13 francs; the price may soon be raised to 14 francs. The great railroad companies in France will build another 2000 kilometers of new lines. Coal is barely sustained, the winter not having been very severe. —Monteur des Interets Metalls.

BRITAIN.

BRUSSELS, February 23, 1885.—Iron.—A tolerably large business has been done in Beams for export at Liege, and more thereof is in treaty. Makers are by no means anxious sellers at prevailing low rates, expecting, as they do, that the revival in the general iron market will soon take place and bring them more remunerative rates. They will rather reduce their output than go on selling at prevailing prices; the only other remedy left them would be a general reduction of wages. At Charleroi larger export orders have also dropped in. The Foreign Coal movement for the year in Belgium has been as under:

	1882.	1883.	1884.
Imports.....	228,000	216,000	169,000
Exports.....	400,000	436,000	421,000
Pig and Old Iron.....	72,000	36,000	34,000
Finished.....	309,000	310,000	311,000
Steel.....	88,000	90,000	76,000

We quote at the close: English Pig, 5 francs per 100 kg.; Charleroi, 6.75; Athis, 4.90 @ 5; Puddling, 4 @ 4.80; Charleroi, 11.25 @ 11.50 for No. 1, 12 No. 2, and 12 No. 3; Beared Wire, 12 @ 12.50, and Corners, 12.50 @ 13; Sheets, 13.50 @ 25.50. Coal for industrial purposes is firm at 7 @ 7.50 francs. Stocks now begin to accumulate, and the output may have to be curtailed to prevent a serious decline. The Foreign Coal movement for the year in Belgium has been as follows:

	1882.	1883.	1884.
Imports.....	1,050,000	1,302,000	1,254,000
Exports.....	4,292,000	4,411,000	4,698,000
Coke, 1,094,000		996,000	849,000

—Monteur Industriel.

GERMANY.

HAMBURG, February 23, 1885.—Iron.—Matters in the Pig-Iron market in Rhenish-Westphalia have not developed favorably during the week under review, and a decline of 1/4 mark per ton has had to be submitted to. Spiegel forms the only exception, being in active demand for export. Puddling Pig is neglected; Merchant remains steady; Thin Sheets are in better request, but at a decline. There is no demand for Rolled Wire. Car-makers have again received some work through the late adjustments. About stocks of Pig it may be stated that they are on the increase in some localities. There is some inclination on the part of consumers to take hold of futures for the second quarter of the year of Foundry Pig, and some transactions may result therefrom.

Pig Iron Production in Germany—Tons.

	1884.	2,068,692
Puddling.....		120,555
Bessemer.....		486,083
Thomas.....		486,746
Foundry.....		37,079
Total.....		3,585,155

Against

	Puddling.	Bessemer and Thomas.	Foundry.	Castings.	Totals.
1883.....	2,002,195	1,072,357	370,648	15,524	3,460,719
1884.....	2,001,341	1,072,357	370,648	15,524	3,460,719
1885.....	1,728,952	880,750	281,619	10,694	2,910,009
1886.....	1,731,750	781,538	348,302	16,447	2,759,038
1879.....	1,592,814	461,253	161,696	10,824	2,226,587

In Upper Silesia Pig Iron is firm, but unaltered; production for the week has been a little less, the Reden furnaces being under repairs. There is more doing in the export trade to Poland. Rolling Mills have received a great many orders. While Thin Sheets are wanted, Coarse Sheets are neglected. Merchant Iron has ranged between 106 and 110 marks per ton. Metals have remained unchanged. Spelter is more active at Breslau.—Borsenblatt.

HOLLAND.

ROTTERDAM, February 19, 1885.—Tin.—The tendency has been favorable to the holding interest, and Tin has been sparingly offered, thus restricting business. We quote Banca, deliverable from the coming sale, 49.35 shillings per 50 kg. Billiton, February and March, 45.25, and June, 49 paid, with more buyers than sellers at this figure.—Koch & Vlietboom.

AUSTRIA.

VIENNA, February 22, 1885.—Iron.—The demand for Structural Iron, which had been picking up, has fallen off again with the return of frost, and the market has relapsed into dullness. Merchant Iron is still dragging in spite of the lower price. The price of Beams is still very much unsettled, for they are now offered about 3/4 florin below market by one of the Bohemian concerns, and a great effort is being made to bring about a combination among competing works. Meanwhile the question of raising the iron duties is again agitated, and keeps Iron industry in a feverish condition. The Government wishing to complete the rolling stock for its railroads, of Cars in particular, the Minister of Public Works has introduced a bill for funds to that effect. Should the latter not pass, capital will be tendered the department sufficient to enable it to give the orders independently of Parliamentary action in the premises till the next session. Iron is depressed. We quote Pig, 47 @ 56; Merchant, 105 @ 130; Sheets, 160 @ 190, and Beams,

Trade Report.

General Hardware.

The general condition of business is substantially the same as at our last report. From some of the principal inland markets advices indicate a better relative activity than here. Few important changes in prices are reported.

BARB WIRE.

There is a stronger feeling for carload lots, and an advance in the price is asked by some, though irrespective of the action of the meeting at Chicago last week in advancing Barb Wire $\frac{1}{2}$ cent per pound. The volume of business is, under the circumstances, quite fair. We quote for small lots of Galvanized Four-Point Wire, 5 to 5 $\frac{1}{4}$ cents.

NAILS.

The market has been quiet and steady, the country trade not having as yet begun to take Nails. As illustrating the fact, generally conceded, that stocks in consumer's hands are light, it is remarked that occasionally orders are received by parties who usually depend upon cheaper water transportation to get in their supplies. This year they have been forced to call for Nails before the opening of navigation. There is still some selling at a concession by jobbers below the manufacturers' quotation of \$2.20. Steel Nails are selling at the usual advance over Iron Nails.

THE CENTRAL STAMPING COMPANY,

25 Cliff street, New York, are about issuing another section of their price list, the first part of which, relating to Stamped Ware, we gave last week. The next section, covering their line of Japanned Ware, is given in full on the following page, and will be regarded by the trade with special interest. It is subject to the discount already announced of 33 $\frac{1}{3}$ per cent.

Sidney Shepard & Co., of Buffalo, N. Y., have adopted the list prices on Stamped Ware as issued by the Central Stamping Company March 1, thinking thereby to assist in establishing a uniform standard, which has been so much needed for the convenience of both buyers and sellers in this line.

FILES.

The following circular has been issued to the trade by the Nicholson File Company, Wm. T. Nicholson, president, Providence, R. I. It will interest our readers as giving the views of this leading company on the demoralized condition of the File market, and indicating the remedy they propose. If the best makers will resolutely hold their Files at a price that affords a fair profit, and if the jobbers will refrain from cutting into the manufacturers' price by giving away part of their specials, and if the general retail trade will show their good sense by their willingness to pay more for a good than for a poor File, the difficulty will be pretty well disposed of. But we most heartily commend to the trade the suggestions of the circular, and shall be pleased to learn that the factory price of these Files, discount 60 per cent., is maintained:

The present seems to us a favorable time to consider the price of our goods, and to determine whether any effort shall be made to stop the unreasonably downward course which has developed so rapidly during the past year. Extremely low prices, yielding little or no profit to the manufacturer, do not seem to be justified by any sound reasoning. A reduction of 50 per cent. in cost values results in an absolute loss to the jobber even though he double his sales (by whatever increased expense or risk, necessarily follows), the per cent. of profit being the same, and gains him little or nothing if he should double his per cent. of profit. In an article of manufacture of the nature of Files, requiring skilled and necessarily high-priced labor, both in the production of the Steel used and its manipulation into a File, the manufacturer should not be tempted to use inferior or unskilled labor, or to place even one of his "seconds" in each package of his "firsts," to keep down his net cost. Nor do we think it the proper office of the middleman or distributor, standing, as he does, between the two principals in interest, to demand that goods of repute should be leveled in price to those of either unknown or inferior brands, because he has it in his power to force trade to a certain extent in such goods. Believing, as we still do, in the good common sense of our jobbing friends, we think they will see it for their interest to aid us in bracing prices, by co-operating with us in sustaining our "factory prices" of this date. With orders coming in freely, stocks light in the hands of dealers, and unusually so in the hands of consumers, we would say to our friends, Do not wait too long before ordering, as our stock is already considerably reduced, and a slight increase in the demand would necessarily stimulate prices and cause delay in filling orders.

THE WIRE GOODS COMPANY,

Worcester, Mass., for whom Sise, Gibson & Co. are agents, 100 Chambers street, have issued a new catalogue of their Hardware and Wire Goods, from which it appears that they are in the market with an exceptionally complete line, to which further additions may be expected. It is also intimated that they make an extensive variety of articles made from wire for special uses, but as these would not interest the regular trade they are not illustrated in the catalogue, which, by the way, is large and attractively printed. But the variety of goods covered by it, and the prices which are named on

them, are indicated in the following discount sheet:

Page.	Per cent.
1 to 14, All.	70% to 10%
15 to 19, Mill Wire Goods.	70% to 10%
20, Wire "S" Hooks.	70% to 10%
21, Belt Hooks.	70% to 10%
22, 23, Spring Cotter.	70% to 10%
24, Double Pointed Tacks, in boxes.	70% to 10%
25, " " " in bulk.	70% to 10%
26, Steel Spring Staples.	70% to 10%
27, Electrician's.	70% to 10%
28, Casket and Hoop Staples.	70% to 10%
29, Blind Staples.	70% to 10%
30, Bed Spring Staples.	70% to 10%
31, Cary's Patent Wardrobe Hooks.	70% to 10%
32, " " " Knobs.	70% to 10%
33, " " " Towel Bracket.	70% to 10%
34, Patent Garment Hangers.	70% to 10%
35, Brass Flush Rings.	70% to 10%
36, " " " Drive Hooks.	70% to 10%
37, " " " No. 1412.	70% to 10%
38, " " " and Mirror Hooks, all.	70% to 10%
39, " " " Cup Hooks, all.	70% to 10%
40, " " " Looking Glass Plates.	70% to 10%
41, " " " Screws.	70% to 10%
42, Line Cleats, Brass.	70% to 10%
43, " " " Cast Iron.	70% to 10%
44, " " " Malleable Iron.	70% to 10%
45, Lamp Hooks.	70% to 10%
46, Chandelier Hooks.	70% to 10%
47, 48, Brass-Head Picture Nails.	70% to 10%
49, Porcelain-Head Picture Nails.	70% to 10%
50, " " " Knobs.	70% to 10%
51, " " " Rings.	70% to 10%
52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100.	70% to 10%

MISCELLANEOUS PRICES.

The Covert Mfg. Co., West Troy, N. Y., call attention to an error in their recent discount sheet, which we printed in our last issue. The discount on their Open Eye Snap should be 50 and 10 per cent., instead of 60 per cent., as printed. The trade will please note and make the correction.

The following is the price list of the Elliott Pneumatic Door Checks, which are manufactured by H. N. Bates, 358 Atlantic avenue, Boston, the list being subject to a discount of 25 per cent.:

Hercules, adapted to extra heavy doors.	\$7.00
No. 1, adapted to doors not exceeding 3 feet wide by 8 $\frac{1}{2}$ inches thick.	6.00
No. 2, adapted to doors not exceeding 2 feet 8 inches in width by 2 inches in thickness.	5.00
No. 3, adapted to doors not exceeding 2 feet 8 inches in width by 1 $\frac{1}{2}$ inches in thickness.	4.00
No. 4, adapted to light doors in private residences.	4.00

The only change in the price of the Patent Eave-Trough Fastenings made by J. P. Abbott, Cleveland, Ohio, for the present season is that the discount of the "Triumph" Eave-Trough Fastener is 33 $\frac{1}{3}$ per cent., instead of 30 per cent. Abbott's Cold-Handle Stove Lifters are quoted at \$9 per gross, subject to a discount of 10 per cent.

The Kelsey Cartridge Company, New Haven, Conn., who are not members of the combination on the line of goods they make, call attention to their Patent Conical Brass Shot Shells, and the reduced prices at which they offer them. They refer to them with confidence as superior in quality and as being stronger and more durable in the base than other brass shells, adding that the conical base insures 25 to 30 pounds less recoil than in the ordinary shell, while they are at the same time especially light. The following are their net prices:

No. 10, length, 3 $\frac{1}{2}$, 2 $\frac{1}{2}$, per 100.	\$3.25
No. 12, length, 3 $\frac{1}{2}$, 2 $\frac{1}{2}$, per 100.	3.25

X or Second Quality.

No. 10, length, 3 $\frac{1}{2}$, 2 $\frac{1}{2}$, per 100.	2.75
No. 12, length, 3 $\frac{1}{2}$, 2 $\frac{1}{2}$, per 100.	2.75

They also quote Paper Shot Shells, which are warranted equal in quality to any Paper Shell of the same grade, at the following net figures:

No. 10, length, 3 $\frac{1}{2}$, per 1000.	\$4.50
No. 12, length, 3 $\frac{1}{2}$, per 1000.	4.00

X or Second Quality, Warranted for One Shot.

No. 10, length, 3 $\frac{1}{2}$, per 1000.	4.00
No. 12, length, 3 $\frac{1}{2}$, per 1000.	3.75

The following is the price list of the Climax Pipe Wrench, John Q. Maynard, 12 Courtlandt street, New York, a description of which we gave recently. The list is subject to a discount to the trade of 33 $\frac{1}{3}$ per cent.:

Sizes.	No. 1.	No. 2.	No. 3.
Length of handle.	10.	12.	16.
Size of Pipe.	0 to 1 $\frac{1}{2}$	0 to 2	2 to 3 $\frac{1}{2}$
Price.	\$1.75	2.00	3.00

Sizes.	No. 4.	No. 5.	No. 6.
Length of handle.	19.	24.	30.
Size of Pipe.	3 $\frac{1}{2}$ to 2 $\frac{1}{2}$	3 to 3 $\frac{1}{2}$	3 $\frac{1}{2}$ to 4
Price.	\$4.50	6.00	10.00

WHAT THE TRADE SAY.

From a well-known wholesale house in Iowa, writing under date March 3, we have the following review of the market and their opinion as to the outlook for the spring trade:

The past winter has been a very quiet one, so far as regards trade. Collections have been fair, doubtless owing to the disposition on the part of our customers to pay their

existing debts before contracting new ones. We think the average strength of the trade is better than for some time back. The lifting of the snow blockade has given a decided impetus to sales the past two weeks, and the demand for goods is not confined to any one line, but covers the range of Heavy and Shelf Hardware. While we do not look for any "boom" in the way of orders, we feel decidedly encouraged at the present state of trade, and anticipate a good, steady demand for goods in our line. Prices seem to be steady, and we think the feeling is gaining ground among the dealers that values have settled to that point which makes it safe for them to buy freely for their legitimate wants. This condition, coupled with the low stocks throughout the country, should tend to create a good, healthy trade.

We are glad to be able to give our readers the benefit of the views regarding the trade which are contained in the following communication from a well-known Hardware manufacturer. After referring to some matters relating especially to his own business, our correspondent thus refers to the general situation, and our readers will concede as mischievous features in the trade, the overbuying in good times and the undercutting in bad times, to which the writer so forcibly alludes:

The question has been asked time and again, Why this terrible depression, and why are prices so demoralized? This, to us, seems an easy question to answer. Of course there is a time coming when business will be better and prices will advance. Why do these times come so often? To speak plainly, men act like fools. They don't use reason. If iron should advance—say, \$5 per ton—every one who handles anything made of iron would order three or four times as much as he wanted. Then manufacturers add to their plant and largely increase their business, thinking things are always going with a rush. There are men who start out with the insane idea that they can do all the business of the country in their line. They are going to crush out all others. These manufacturers have a trade which they call their own—trade that depends on them for the goods they want. In good times this will keep a moderate manufacturer with all the work he wants. There is a class of buyers who will buy any time and of any one who will shade prices. They do not depend on any one in particular for their goods. Now, if manufacturers would be satisfied with their own trade in times of depression, and not reach out after trade that does not belong to them, there would be no necessity to cut prices. Men do not cut prices on their own customers. But this they will not do. When business begins to fall off, some of these ambitious men don't want to reduce their production, so they are going to be smart and go for my customers, or some other man's customers, to get orders to keep their factory going. We will just follow this sharp smart party: He goes to my customer and says: "We have large and increased facilities for getting out goods promptly and in the best manner; we want to sell you, we want your orders." My customer says: "No, we buy our goods of Mr. —; we do not want to change. We are well used and are satisfied with the goods." But, says this man, "We will take your order at considerable less than you pay Mr. —; we want to get your trade and will make it an object to buy of us. This is confidential; do not say anything about it." My customer says: "Well, you can leave your prices, discounts, &c." This party gives my customer very low prices, but does not get an order. In a few days we have a letter from our customer, saying: "We have been offered goods at considerably less than we have been paying you." He gives us the figures and says, "We expect you to meet it. Please send us the goods ordered below."

This tells the whole story. The man has not got an order or gained a customer. He has cut prices, and those prices become general. This has been repeated right along for two years or more. Then men wonder why it is prices are so demoralized. When the end will come we do not know. There is considerable business, but there are too many after it. Some parties do not seem to care much what the price is if they only get an order. If parties say they will not sell at these low prices, then they lose their trade and have nothing to do. This is about the situation.

In reply to an inquiry of one of our correspondents in a recent issue, regarding 6, 8 and 10 ounce Tinned Carpet Tacks at 22 $\frac{1}{2}$ cents per dozen, the Union Steel Screw Company, of Cleveland, Ohio, advise us that they would be pleased to give our correspondent full information upon the subject.

A merchant writing from the West mentions that the farmers in his section are expressing hope that the possibility of complications between England and other nations may advance the price of wheat. He alludes to this as showing how much more appreciative of the causes that affect the market are the farmers of the present day than were the same class 25 years ago. He adds also, as indicating that the increase of their knowledge is not altogether favorable to the interests of the trade, that there is hardly any article in the agricultural and farming line but they can tell the cost of, as they are kept posted by circulars from wholesale dealers. The same remark, he says, also applies to their knowledge of the price of Barb Wire, Guns and many other articles.

From an Ohio Hardware man who has accepted the invitation which we have extended to the trade to advise us with reference to the condition of business, and also to express their views as to matters of trade interest, we have the following communication, which does not give, it will be perceived, a very glowing account of the condition of business the last few months:

We are obliged to look at the trade prospect from the standpoint of a thriving manufacturing town of between 40,000 and 50,000, and, looking at it from this vantage

ground, we find much to discourage for the present, and a great deal of encouragement for another season. After making careful inquiry among our manufacturers, we are satisfied it is lack of money as well as lack of confidence which prompts dealers to ask that their contracts made last fall and winter be canceled or cut down. They state that there is hardly an exception, where such contracts have been made, in which they are not asked to make these concessions as to the quantity to be taken, giving as a reason slow collections and a desire to be on the safe side after the season is over. February has been the hardest month in the year on all classes of trade, and more particularly with the retail part of it. The close of the present month will probably show up the survival of the fittest, and the ordinary months of activity to follow may agreeably surprise some of us as to strength of the prediction of still duller times. Whatever the result of the next few months may be, we will all have stocks cleaned out as they never were before, storerooms in better shape, fewer bad accounts made the present year than any other for a long time, and a general feeling of confidence that no amount of "boom" could give.

Concerning the Ripley Hinge Works, Ripley, Ohio, to which reference was made in our last issue, we have the following information, which will be of interest to our readers as giving the history of this enterprise:

Ten years ago Andrew King, a well-known Hardware merchant of this place, started as an individual enterprise the manufacture of Wrought-Iron Strap Hinges here, but, after a few years virtually spent in experimenting, the work was suspended and the shops have since been idle. During the past winter the general stagnation of productive industries and the dearth of regular employments prompted Mr. King and a few associates, with a view of furnishing remunerative employment to a dozen hands rather than for immediate profit, to reorganize the enterprise under the name of Ripley Hinge Works. The works are now established in the old factory building corner of Locust and Second streets, where the leading sizes of Hinges are made equal in finish and general appearance to any in the market. The sale of these goods is at present exclusively in the hands of two or three leading houses, who take the entire product at the market price. It is thought that the close proximity of rolling mills and blast furnaces—the iron and coal fields near at hand—coupled with cheap river transportation, offer here an unusual combination of elements necessary to the success of an enterprise of this kind.

ITEMS.

The Gilbert & Bennett Mfg. Co., 42 Cliff street, New York, have opened a branch warehouse at 228 Lake street, corner of Franklin, Chicago, where they will carry a full line of their goods, including Galvanized Iron Wire Cloth, Galvanized Twist Steel Wire Poultry Netting, Web Wire Fencing, &c., to which they direct the attention of Western buyers.

H. Chapin's Son, Pine Meadow, Conn., who, during the last year, added to the line of his manufactures Boxwood Skate Rolls, with a capacity for 250,000 per month, is now increasing his facilities for the improved and increased production of Stationers' Rules and School Rules, which he has been manufacturing for a number of years.

Brown Bros., Waterbury, Conn., having given up the manufacture of Flat Ware, Simpson, Hall, Miller & Co., Wallingford, Conn., have purchased their dies and other tools, together with the patents, stamps and trade-marks for these goods and the goodwill of that part of their business. They have also purchased a large stock of goods, amounting to something like 3000 gross. It is not understood that they contemplate at present engaging in the manufacture of any of Brown Bros' Plated Ware, but they intend to manufacture their German Silver Spoons, and intimate that they hope to keep up the quality, and to put them on the market at prices that will compare favorably with other first-class brands. On this line of goods they are prepared to hear from the trade.

Timothy B. Hussey, North Berwick, Me., is adding to his factory another building 40 x 100, three stories and basement, giving him 16,000 feet of floor space for storage, in addition to 32,000 square feet of floor space which are already in use. His specialties, it will be remembered, are Steel and Hard-Metal Plows, Steel Coulter Harrows and the "Centennial" Horse Hoe.

A. A. Weeks, 82 John street, New York City, has purchased all the right, title and interest of E. S. Bloomfield in the Bloomfield Call Bell, also the patent, together with the stock and tools used in manufacturing the same.

Notice is given that the business established by the late William B. Dean, importer and jobber of Glassware, 43 Murray street, will be carried on by his widow, at the same place and under the name of William B. Dean. William J. Darnstaedt will continue in the management of the business.

The attention of Hardware men is directed to the announcement on page 20 of a large sale of Hardware, Cutlery, &c., March 25, at the auction rooms of E. Bissell & Co., 83 Chambers street.

Q. S. Backus, manufacturer of Bit Braces, Ratchet Braces, Angular Borers, &c., has discontinued his New York office, his address being Winchendon, Mass. He also announces that he has made arrangements by which the same rates of freight to points West can be secured from Winchendon as from New York.

Among the Special Notices on page 20 is one in which a manufacturing concern who have

large facilities for selling and ample room for storage in this city desire agencies in the Hardware line. In addition to the information in the advertisement, we can say to our readers that the house thus proposing business relations with manufacturers is of high standing and well known to the trade.

The Alford & Berkele Company, 77 Chambers street, New York, inform the trade that they have been appointed exclusive agents for the sale of the Fish Hooks manufactured by the American Needle and Fish Hook Company, New Haven, Conn., and of the Fish and Chalk Lines manufactured by S. Draper & Son, Troy, N. Y.

Paine, Diehl & Co., Philadelphia, call the attention of the trade to the new Roberts Adjustable Window Screens, which are represented in their advertisement on page 35. The advantages claimed for this Screen are as follows: That it will fit over the top as well as the bottom sash; that it fits any window, in any position, either upside down or inside out, and is perfectly self-adjusting; that it shows no crevices, no matter what the level of the window may be; that it has a central elevated ridge, both top and bottom, extending the full width of the Screen, whether opened, partly closed, or closed, which touches the full width of the window and frame; that its working cannot be affected by damp, and that it is light and strong, cheap and well made. Size 18 x 35 packs 2 dozen in a crate, 25 x 10.

The Columbia Bolster Spring Company, 5 and 7 Dey street, New York, issue a circular relating to their Springs, and mentioning that in future, in order to secure entire uniformity in the quality of the goods, they shall make the Springs of Crucible Cast Steel. They will also add an adjustable block for the purpose of strengthening the Springs and admitting of their adjustment to wagons of different widths. While these changes will enhance the cost of manufacture, they announce that they will maintain present prices. They also call the attention of the trade to the new patent Seat Spring which they are putting on the market. They speak of its first cost as being a trifle higher than the ordinary elliptic spring, but, being made of crucible cast steel, claim that it will not break, and that, as it needs no additional labor to attach it to the wagon, the cost in the end is less.

W. S. Hammond, Lewisberry, York County, Pa., has recently put on the market an additional Window Sash Spring, "Style D," which is made especially for use as a sash lock, to be used in connection with weights, for either upper or lower sash. The sashes by this contrivance are automatically locked when closed, and also when open slightly, thus securing ventilation and preventing the intrusion of burglars. An additional advantage mentioned is that the sash cannot be raised by small children, even though the sashes are left open, as they remain locked where left. But our readers will be able to obtain such further information as they desire of the manufacturer.

E. S. Hulbert & Co., manufacturers of Hoes, Butcher and other Knives, &c., Barnardston, Mass., in addition to their agency with Bates, Wilson & Co., in this city, have appointed as agents Spear & Gittings, Baltimore, Md., and H. H. & C. L. Munger, Chicago, Ill. With the present condition of prices on Hoes they are not making much effort on that line. They have recently added a Carving Fork to their Knives, with patent guard, a single pair being put up in a box, and listed at \$1.50. They describe the Knife as made from double Shear Steel, and hand-forged. They are now putting coco handles on their Cheese Knives, instead of beech wood. The only change in price which we have to call the attention of the trade to is a reduction of the list price on 5-inch Butcher and Skinning Knives from \$3.60 to \$3.08 per dozen, and on 5 $\frac{1}{2}$ -inch Butcher and Skinning Knives from \$3.90 to \$3.64 per dozen.

CATALOGUES, ETC.

The Duggan-Parker Hardware Mfg. Co., St. Louis, have just issued their catalogue for 1885. It is an attractive volume, which exhibits an extensive line of Gray and Malleable Iron Hardware, the manufacturers intimating in their preface that the assortment of these goods is larger than can be found in any other manufacturing establishment of its kind in the West. Attention is called to the fact that all bronzed goods manufactured by them having ground surfaces and edges, which were formerly labeled "Berlin," will hereafter be labeled and known as "Brussels" bronzed, and those bronzed goods having an unground surface and edges, which were formerly labeled "Tuscan," will be labeled and known as "Paris" bronzed. An examination of the catalogue shows that the company have largely increased their line of goods by the addition of new designs, or of new sizes or new styles of finish. Among the goods thus added to their line we may mention the following: Hay Fork Pulleys, Roggin's Latches, Foot Scrapers, Clothes Line Hooks, Harnes Hooks, Ceiling Hooks, Chandelier Hooks, (of which a new pattern is shown on page 21), Chest Handles, Brackets, Twine Boxes (several new patterns), Paper File Hooks, Bird Cage Hooks, Pump Fixtures, Boot-jacks, Pokers, Sash Weights, Mauls, among which are several new styles to which we have not directed special attention. The list closes with a line of Malleable Iron Hardware for Carriage, Wagon and Agricultural Implements.

Matthai, Ingram & Co., Baltimore, Md., have in press a spring catalogue illustrating

goods especially adapted to the summer trade. It is intimated that illustrations of many of their specialties, Water Coolers, &c., of their own manufacture, are to be a marked feature of the forthcoming book. Among the new articles they have added to their line of goods recently are a full line of Milk Kettles, ranging in size from 1 to 8 quarts, which are described as differing in shape and construction from any heretofore made. They have also completed and in operation machinery for making Oval Buckets, for the quality of which they make special claims. This house advise us that they have entirely recovered from the effects of the fire 18 months ago which consumed their works and plant, and have erected buildings and constructed machinery of the most approved styles, much of which they advise us is automatic and not duplicated anywhere, so that they are now enabled to produce more than double the quantity of goods they could before the fire.

Klein, Logan & Co., Pittsburgh, Pa., who are represented here by W. Dodman, 107 Chambers street, have just issued a catalogue showing the line of Railroad, Mining and Quarry Tools—Sledges, Hammers, &c.—which they manufacture. To their regular line of Mattocks, Picks, Heavy Hammers, Crow Bars, Fire Shovels, &c., they have made several additions, among which we would call the attention of the trade to the Bush Hammers, Stonecutters' Chisels, with and without teeth, Stonecutters' Pitching Tools and Points, Hand-Chipping Chisels, Cape Chisels, Cold and Hot Chisels, &c. It is pleasant to note that these manufacturers report that during the last year they have been called upon to increase their facilities, and have added improved machinery for the production of their goods.

A. B. Farquhar, York, Pa., proprietor of the Pennsylvania Agricultural Works, has just issued his catalogue for 1885, offering to the trade an imposing and attractive volume of nearly 200 pages, and illustrating the very large variety of Agricultural Implements and Machines of which he is manufacturer. In the introduction, after expressing his appreciation of the patronage he has received and the fact that only the prominent articles of his manufacture are described in this list, he mentions that every season large amounts are invested in additional buildings and machinery, and alludes also to his endeavor to keep up with the times, adding that he makes it a rule never to put any implement upon the market until he is convinced that it is the best. He also calls attention to the fact that the business has been built up to its present extent without employing traveling agents, preferring to give his customers the advantage of what is thus saved in the quality of their workmanship and materials. Among the many goods which are illustrated in this catalogue the Farquhar Tractor Engines, Separators, Saw Mills and Pennsylvania Force-Feed Phosphate Drills may be mentioned as leading specialties. A Perpetual Hay Press and a Sulky Plow have, among other things, been added during the past year. It is especially to be noted that all quotations given on this line of goods prior to March 6, 1885, are from the price list of 1884.

The Fred. J. Myers Mfg. Co., Covington, Ky., have just issued their new catalogue for the current year. This large volume, of more than 200 pages, with the extensive variety of goods which it displays and illustrates, and the numerous additions which have been made to the line, is an evidence of the enterprise and increasing business of the house, and will be regarded with interest by the trade. In addition to an extensive display of Wire Goods, including Bird Cages, Sieves, Screens, Railings in large variety, Netting, Fencing, &c., it includes a great many specialties, some of which are of new and attractive design. It also covers an assortment of Stable Fixtures, Vanes, Iron Creatings and Finales, Iron Railings for office and outdoor use, Fences, Hitching Posts, &c. The company mention that during the past year they have erected additional buildings, thus enlarging their facilities for producing goods. They announce that all their goods are shipped from Cincinnati, and the most favorable rates of freight secured.

Hibbard, Spencer, Bartlett & Co., Chicago, issue an attractive spring circular of Steel and other season goods. The Steel goods are the Ashtabula. After illustrations and lists of Forks, Hoes, Rakes, Seythes, Cradles, Post-Hole Diggers and Corn Planters, come Wagon Jacks, Wheel Barrows, Clevises, Harpoon Forks, Bush Hooks, Sheep Shears, Barb Wire, Shovels and Spades, Draining Tools, Porter's Adjustable Door and Window Screens, Screen-Door Hinges, Latches and Barn-Door Hangers.

Alfred C. Rex & Co., Frankford, Philadelphia, whose New York branch, under the management of Chas. E. Spier, is at 126 Chambers street, in their catalogue for the current year, to which we recently directed attention, have added several new articles to the line of their manufacture. Among these may be mentioned the "King" Cake or Emulsion Mixer No. 4, which has a capacity of 2 quarts; the "Rex" Meat, Fruit and Juice Press, a patent for which has been applied for; the "Perfection" Tobacco Cutter and Shaver, and the "Acme" Cigar Lighter and Cutter, which is made in different sizes and styles. The list also exhibits the well-known line of specialties of which this house are manufacturers.

The McShane Bell Foundry, Baltimore, Md., Henry McShane & Co., proprietors,

issue a catalogue showing the line of their Genuine Bell Metal, Church, Academy, Factory, Chime and other Bells, with full descriptions and prices. They call special attention to their Chimes and Peals, and the list of Bells made and shipped by them illustrates the extent to which their Church Bells have been sold.

The Bromwell Brush and Wire Goods Company, 181 Walnut street, Cincinnati, have issued their catalogue for 1885. From this substantial pamphlet it appears that the business was established in 1819, and that at present 250 hands are employed in producing the large variety of goods thus offered to the trade. They mention that for the present season they shall offer new and improved styles of Shoe, Scrubbing, Horse and White-wash Brushes at very low figures. They claim that they are the largest manufacturers of Paragon Fly Traps and Wooden Bird Cages. The company are represented in this city by the De Witt Wire Cloth Company, 89 Chambers street, who are agents for New York and New England States.

Chas. Betcher, successor to Harrison & Knight, Minneapolis, Minn., issues a special list for 1885 of jobs, parts and Bodies. Among the new features to which he calls attention are reduced prices with Steel Axes in every job and part. He mentions also that he has added to his stock many new styles especially deserving attention.

The catalogue of the Pennsylvania Wire Works, Edward Darby & Sons, Philadelphia, displays the line of Iron Fences, Window Guards, Bank and Counter Railings and other Wire Work which they manufacture. They mention that, having enlarged their factory and secured increased room and facilities, they are prepared to take orders for Ornamental Wrought and Cast Iron Work, Fire Escapes, Builders' Iron Work, Crestings, Finales, Entrance Gates, Fencing, Railing, Cellar Window Grates and Grille Work of every description.

The circulars of the Empire Winger Company, Auburn, N. Y., show that, besides their Empire Purchase Gear Winger, they are manufacturers of Empire Drying Bars, and Folding Benches, the Empire Folding Cot Bed and Web's Independent Swing.

The Missouri Tent and Awning Company, 218 and 220 Chestnut street, St. Louis, Mo., have issued a catalogue of their Tents, Awnings, Wagon Covers and Waterproof Oiled Clothing. They announce on their initial page, among other things, that they have increased their capacity to 100 Tents, 1000 Wagon Covers and 500 pieces of Waterproof Oiled Clothing per day.

We are in receipt of the two catalogues of the Northwest Lumber Company, for whom the Francis T. Witte Hardware Company are sole agents, 111 Chambers street, New York. One catalogue represents the "Ideal" Refrigerators, the cheaper grade, which are described as made of good materials, and are designed to compete with the lower-priced goods. The other catalogue represents the "Mackinaw" Dry Air Refrigerator, which is a higher-priced article, and is described as made from selected materials, of superior workmanship, and unexcelled by any Refrigerator in the market. To this line of goods we may have occasion to refer again. We also notice a Moth-Proof Cedar Chest for preserving furs and other clothing. These are made in two styles, plain and paneled. We may add that in addition to this line of Refrigerators the F. T. Witte Hardware Company are also selling those of other manufacturers.

The Detroit Block Works, Detroit, Mich., for whom John H. Graham & Co., 113 Chambers street, are agents, have issued their catalogue for 1885. It represents their regular line of goods, with which the trade are familiar, with one novelty, the Improved Snatch Block, of which we give a description on page 7.

George N. Pierce & Co., Buffalo, N. Y., and 195 Water street, New York City, have issued their catalogue of Japaned and Brass Bird Cages, Refrigerators and Ice Chests for the present year. In their address to the trade they mention that they are making over 160 styles of Bird Cages, and 14 styles and 46 sizes of Refrigerators and Ice Chests. To the illustration and description, with prices, of these goods this pamphlet is devoted. The Bird Cages, Brackets, Cage Trimmings and sundries are subject to a discount of 50 per cent., and the Refrigerators, Ice Chests, Refrigerator Pans and Grocers' Chests are subject to a discount of 33 1/3 per cent. In this line of Refrigerators the "Empire," "Favorite" and "Superb" may be regarded as leading styles, but as new goods the trade will be interested in the "Economy" and "Champion" Sideboard Refrigerators. The names of their agents will be found in their advertisement on page 14.

The Goodell Company, Antrim, N. H., for whom the Alford & Berkele Company are special agents, 77 Chambers street, New York, in their new catalogue, to which we have before referred, have incorporated, as we have already intimated, some new goods. Among these we would call the attention of the trade to the following: Table, Medium and Dessert Knives, Patent Combination Inlaid White Metal and White Bone Handles, Square End Hollow Bolster; Curved and Swedged Blade Table Knives and Forks from No. 76 to No. 1791, in solid handles; a number of new patterns of Knives and Forks in scale tags; Riveted Handle Scale Tang Butcher Knives from No. 446 to No. 455; Association Pattern Butcher Knives, Boning Knives, Bread Knives and Kitchen

Knives. The list displaying the whole line of goods is compact and conveniently arranged.

The catalogues which Haight & Clark, Albany, N. Y., issue show the line of Wire-workers' Castings and Cast-Iron Bases, Boots and Knobs for Wire Forms; also Sockets and Gate Hinges for Iron and Wire Railings which they manufacture. To this line, they advise us, they are constantly adding, making a specialty of Ornamental and Art Castings, also Piano Plates, Brackets, Organ Pedals, Castings, &c. Goods are finished in plain iron or Japan, bronze or nickel, as desired.

The Challenge Refrigerator Mfg. Co., H. M. Diggins, Jr., & Co., 238 Main street, Cincinnati, Ohio, illustrate in their catalogues and circulars the Challenge Refrigerator and Ice Chests for the coming season. They also refer especially to their New Challenge Confectionery Refrigerator, which is intended for cream chocolates and similar delicate confections, and in which they can be cooled and kept solid. The arrangement, as indicated by the cut, shows that the Refrigerator is divided into two parts, each part being supplied with rows of slides for candy pans. It is guaranteed to be a perfectly dry Refrigerator. Height, 84 inches; width, 44 inches; depth, 30 inches.

JAPANED WARE.

CENTRAL STAMPING COMPANY'S LIST FOR JAPANED WARE, MARCH 1, 1885.

Bath Tubs, Sponge, each																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																		
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" 3,	52 "	14 "	" "	140 "
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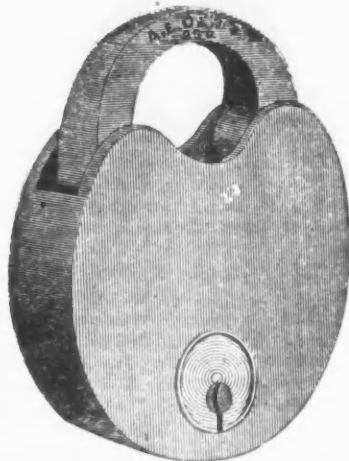
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Made to any Length,
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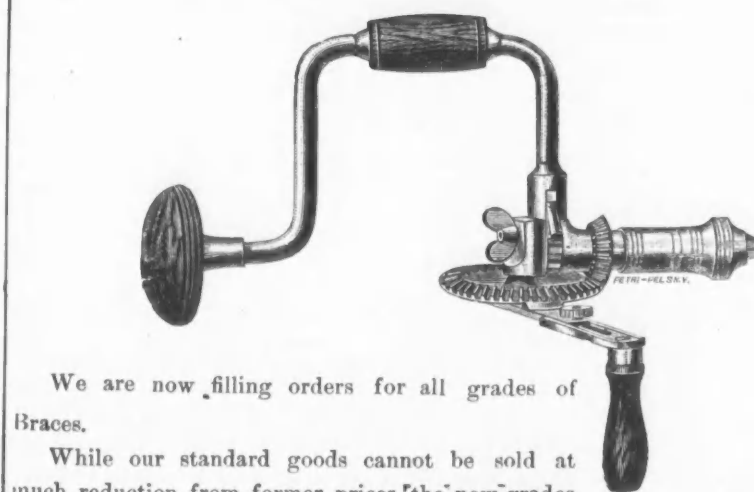
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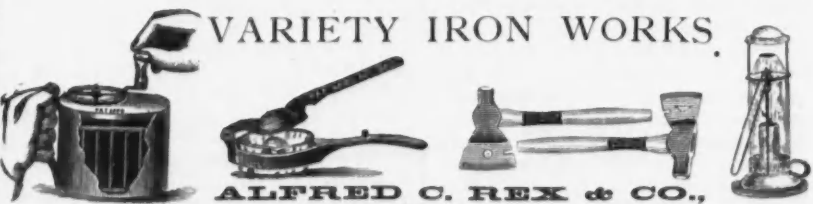
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HOT FORGED AND COLD HAMMERED POINTED. MADE OF BEST
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We ask the special attention of the trade to our C. H. No. 1 Boiler Plates, which we
manufacture expressly for the Shells of Steam Boilers and stamp 50,000 pounds T. S. when
desired. One hundred and sixteen tests of this iron, made during the last three years by the
U. S. Inspectors of Steam Vessels, show an average tensile strength of 58,808
pounds to the sectional square inch, and an average reduction of area of the fractured
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The Hazelton Boiler.

In a quiet way the Hazelton boiler, first brought to public notice about two years ago, has been doing some very good work, and figures which are now given concerning its performance are of a most satisfactory character. Without laying claim to an exceedingly high evaporative power closely approaching or even going beyond the theoretical figure, as has been done in several cases which have come under our notice, the boiler certainly has some novel features and advantages well worth considering. It seems to have been specially designed for the utilization of waste heat and waste material in manufacturing establishments, and for this purpose the grate to heating surface was made very large, the great extent of the latter being the most striking feature.



Fig. 1.—Elevation.

THE HAZELTON BOILER, BUILT BY THE HAZELTON BOILER COMPANY, NEW YORK.

From the engravings it will be readily understood that the boiler consists of a center tube, standing vertically, and bored with the requisite number of holes, into which radial tubes or arms are secured at one end by screwing them in the small boilers, or by expanding in larger sizes. The size of the center tube varies with the power required,

reaching up nearly to the top of the center tube, with a cap on the upper end and an elbow on the lower one, connected to the steam-pipe which runs from the boiler. By this means all steam has to go to the outer end of the large tubes before it can get into the small ones, and it is thus taken from the hottest and driest point of

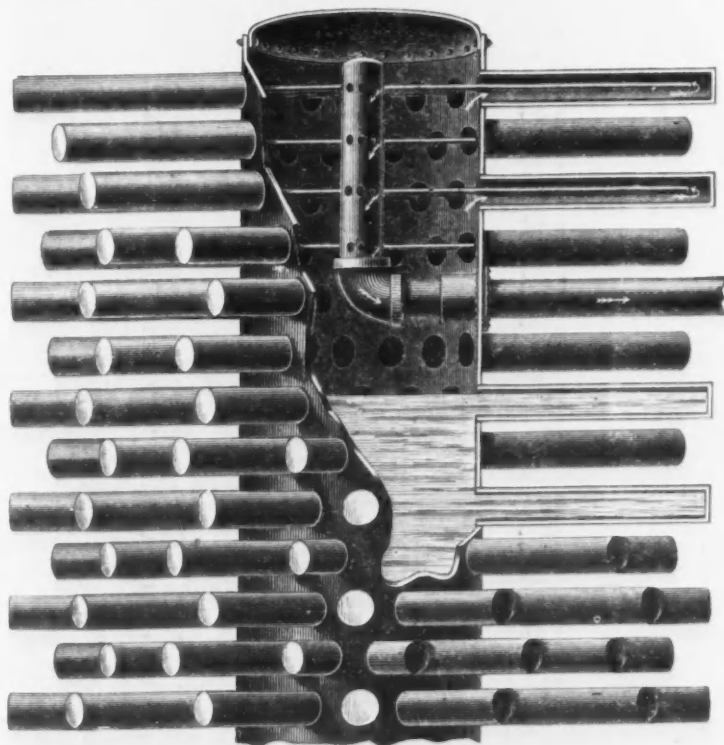


Fig. 2.—Partial Section of Center and Radial Tubes.

small boilers up to 25 horse-power consisting of a lap-welded tube with heads welded in both ends, while larger boilers up to 400 horse-power are made of C. H. No. 1 flange iron, of a tensile strength of 50,000 pounds, with flanged heads, and are thoroughly riveted and calked. The radial arms also vary in size from 1 inch to 4 inches in diameter, and from 1 foot to 4 feet in length, the size of the boiler being governed by the space into which it is to go, and the fuel to be used,

the boiler, and it is practically impossible for any water to pass through into the cylinder of the engine. Each boiler is complete with safety-valve, steam and water-gauges, feed and blow-off pipes and valves, fire and ash-pit doors and grates. The center tube rests on an iron foundation-plate resting on solid brick or stone foundation. The boiler is surrounded with a brick jacket, lined up about half-way with fire-brick, having an air space between the common brick and fire-brick, or

else with a sectional iron jacket with angle-iron edges, bolted together, so that any one section can be taken down for the purpose of examining the boiler; it is lined to the top of the jacket with fire-brick having hollow backs, which allows an air space between the iron and the brick, so as to have as little radiation of heat as possible. The top of the boiler has an iron hood, cone-shaped, fastened to the jacket, into the top of which sits and is secured an iron smoke-stack of sufficient height to secure draft. As the radial arms are secured at one end only, there is little, if any, leakage from unequal expansion and contraction. We recently had occasion to inspect one of these boilers, located at the Jersey City Steel Works, Jersey City, N. J., where it is utilizing the waste heat from a number of melting pots, the hot gases first passing under and through a 30-foot flue boiler. From the information there obtained it seems more than likely that the saving effected will soon cover the cost of the increase in plant.

The boilers are built by the Hazelton Boiler Company, 716 to 720 East Thirteenth street, New York City, and are furnished of any desired size.

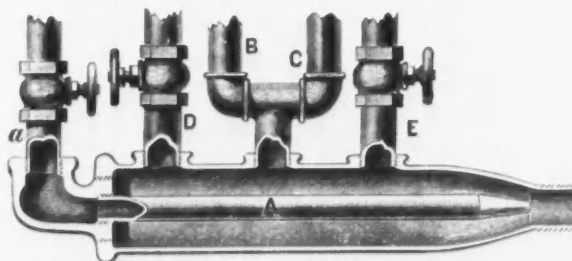
SCIENTIFIC AND TECHNICAL.

The Hydraulic Lift on the Mons Canal.

The difference in the level of the Mons La Louvière Canal, Belgium, is to be overcome with the aid of one of the Clark hydraulic lifts similar to those which have been adopted by the French Government for the Fontinettes lift, on the Nord Canal. The essential feature of these lifts by which canal boats are transferred from one level to another is an enormous hydraulic press for raising the tank in which the boat floats. In the Louvière plant the average lift is nearly 50 feet, the plunger piston having a diameter of 6 feet, and the weight to be lifted being 1022 tons. The first plant of the kind was designed in 1875 by Mr. Edwin Clark for Anderton, near Liverpool, the weight being 250 tons and the lift about 25 feet. At Anderton good cast iron sufficed for the hydraulic press. At Fontinettes and at Louvière that material is no longer safe enough. The pressure of 32.5 atmospheres in the press would lead to such a thickness of metal, if it were made of cast iron, that there would be no assurance of obtaining homogeneous and sound castings. Even cast steel, it was found, would not possess resistance enough, since a casting made for Fontinettes broke under a strain of about 70 atmospheres. Accordingly, the experiment was tried at the Cail Works, Paris, to make a cylinder from rolled steel riveted. In spite of all efforts and the greatest care in riveting, the joints began to leak at a pressure of 40 atmospheres. Then the experiment was tried of placing rings one above another, to make the cylinder of the press, using locomotive tires made at Creusot, the tightness being secured by an interior cylinder of copper. This proved a success, the cylinder standing a pressure of 175 kilograms per square centimeter. Another method has been recently tried at the Cockerill Works, Seraing, Belgium, who started from the idea of using cast iron to obtain a tight vessel and steel to give it strength. Accordingly, they have made a cylinder of cast iron, comparatively thin, hooped with steel rings rolled in the same way as tires, which are shrunk on. A trial cylinder made at Seraing was over 6 feet in diameter and as long, and was tested to a pressure of 130 atmospheres without any effect upon it.

Ozone and the Cholera.

A paper recently read before the Paris Academy of Sciences by M. Onimus states that during the late cholera outbreak at Paris and Marseilles there was a marked decrease in the atmospheric ozone. In Marseilles the mean for July was .86, while in July, 1883, it was 2.17. In Paris in November, 1884, it was .44, and in 1883, 1.82. The author concludes that the condition of the atmosphere was favorable to the spread of the disease. Better drainage, less crowding



M'DANIEL'S SUCTION FITTING FOR STEAM-PIPES.

and better water supply would be greater enemies to cholera than any such change in the quantity of ozone.

Denying a Receivership.—At St. Louis Judge Thayer recently gave his decision with regard to the application of Abraham W. Durgee and Thomas S. Nooran for the appointment of a receiver for the St. Louis Hot-Pressed Nut and Bolt Mfg. Co. The application was denied because the court was of the opinion, after a careful examination of the bill, that it could enter no decree except an order dismissing the bill, because the proper parties were not before the court. Under the averments of the bill, if the proper parties were before the court he might take an account of moneys misappropriated by officers of the company, and compel them to account for the same with the corporation or its receiver. But the plaintiffs had not seen fit to make such officers parties defendant. For the same reason

the court could not on final decree remove the present officers and order a new election, because the officers charged with dereliction of duty were not before the court. In the second place, it appeared that if the court should appoint a receiver such action would be of no practical benefit to the plaintiffs or other corporate creditors. The court could only authorize its receiver to act as custodian of the property for the time being, and that duty might as well be performed by the present board, of which the plaintiff Durgee is a member, at least until his resignation was accepted. The financial condition of the company was such that the receiver's hands would be effectually tied, so that his services would be of no practical avail in relieving the company from their embarrassments. Under those circumstances the court overruled the motion and granted the plaintiffs leave to amend the bill by adding new parties, if they so elected. Leave would be

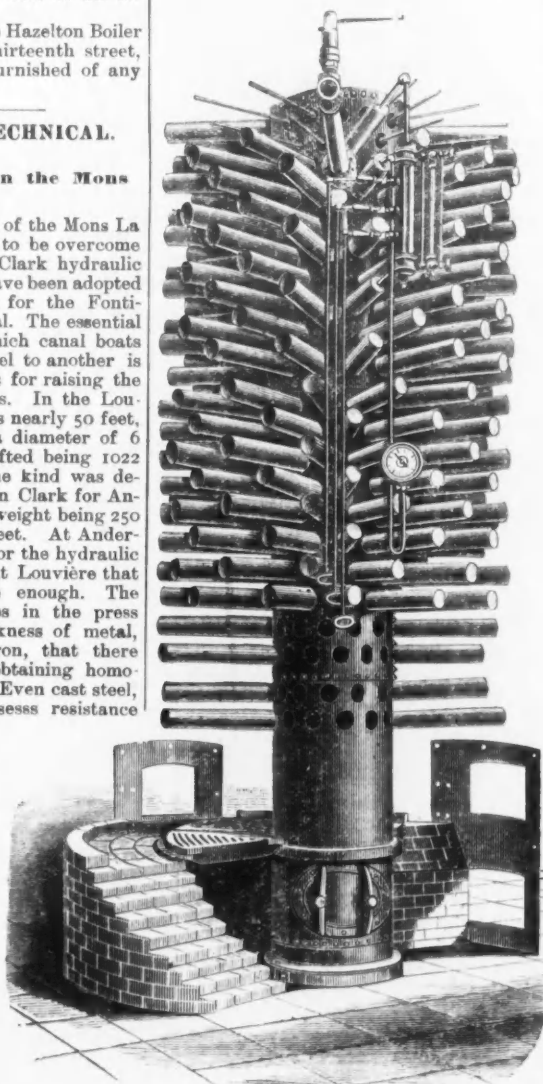


Fig. 3.—Perspective View of Stationary Boiler with Casing Removed.

granted to the plaintiffs to renew the application on an amended bill if any further complications arose.

McDaniel's Suction Fitting for Steam-Pipes.

Messrs. Watson & McDaniel, of Philadelphia, Pa., are now placing on the market what is known as McDaniel's suction fitting, designed to avoid the snapping noise in steam-heating pipes, the water being removed by a steam jet creating a vacuum. By an examination of the annexed cut the reader will see at once how to apply it. A represents the feed or suction pipe, working the fitting and creating the vacuum; B is the steam-pipe from coil, getting steam nearest the boilers. It supplies the steam to work the fitting and create the vacuum, and should always be the best and strongest coil or coils or radiators, and have as dry steam as possible, also one that will be in

can be done, or at some point where all the returns can be brought into the fitting, no matter how far distant from the trap.

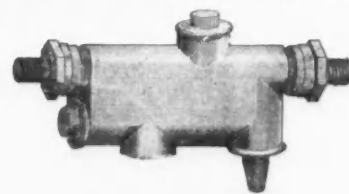
It should be remembered that in using this fitting the radiators or coils selected to make the suction must be those that are always in use and work freely when there is any steam required on the building; otherwise a jet of live steam must be applied. It does not always require a steam trap to be used in connection with it, as it can be attached to pipes leading to a tank or hot well, where nothing but a globe-valve is used. In most cases all returns can be connected in one suction and controlled by one valve, thereby saving much trouble, but it is always best to use a reliable steam trap. The device is cheap, easily attached, and, though on the market only a short time, has already met with gratifying success.

Prospect for Machinery Builders.

The long period of commercial and industrial depression felt in this country, alike with all others, has been especially hard on builders of machinery. From recent favorable reports and the general hopefulness manifested among all classes, we had been led to expect more cheering accounts from the various establishments concerned. The most that can be said, however, is simply that within the last few weeks there have been more inquiries, indicating a readiness to move with the first favoring opportunity. There are in the South, as in other sections, mills which await enlargement or completion, as the demands of business may warrant, and here and there throughout the country are inchoate enterprises—some of them the proposed application of new patents—awaiting development whenever the investment of capital shall promise adequate returns. But up to the present moment it cannot be said that there is any appreciable relief. It is true that one or two of our leading firms speak more cheerily, having reference to recent indications of new business, but others say the dullness was never more leaden. Railroads are doing little beyond current repairs, with rare exceptions, and the locomotive builders, though doing something, are very quiet. Exports are small, excepting as there is an occasional shipment to Central or South America. The resuscitation of railroads in Peru and Chili, from whence orders in former years were very large, has not yet commenced, and the industries of Cuba are still prostrated. With all this, as before remarked, there are of late more hopeful signs. As an indication of the industrial outlook, the condition of these important industries is misleading. Orders for new machinery and tools are always held back until the last minute, and then they are placed upon almost any terms to which makers will agree. As a result, it always happens that those needing new machinery get it six or 12 months late, and makers are driven day and night in filling belated orders long after the demand has practically ceased and the machinery is not wanted by those who ordered it.

New Automatic Injector.

The accompanying engraving shows the external appearance of an automatic injector recently brought out by the Automatic Injector Company, of No. 126 Ontario street, Cleveland, Ohio. The special feature to which the makers direct attention is the simplicity of the device. It is worked entirely by one steam-valve, which when opened starts the machine at once. The overflow, being automatic in its working, shuts off as soon as it catches the water. This takes place in from 4 to 15 seconds, according to the height to which the water is to be lifted. The device has a lifting capacity of from 3 feet to 22 feet. Another advantage is that,



New Automatic Injector.

should the water from any cause be taken from the suction-pipe, it will again start as soon as water is supplied, and will do this without any attention. The injector will also work well even should the suction-pipe leak air. This, the company claim, no other injector will do. The device is of such a character that it may be worked from its full capacity down to one-third of the full supply. It can be controlled for as much or as little water as the engineer may require. Twelve sizes are made, ranging in capacity from 100 to 3000 gallons per hour, at 60 pounds pressure.

Colonial Extension.—The German annexation of the northern portion of New Guinea, following closely other territorial acquisitions in the Western Pacific Ocean, is the cause of great and increasing excitement throughout Australia. A Melbourne correspondent says: "Our hope now is that the mischief is not absolutely beyond remedy, and that either Prince Bismarck will respect the natural Australian ambition and agree to vacate New Guinea, or else that the protectorate which the German navy has set up may be considered only as a protectorate of private interests, and may be overlaid by a Government protectorate on the part of Great Britain. The present state of things must give rise to continuous irritation. The German traders who have their headquarters in Sydney know that they can buy up any amount of foreshore and good harbors in the islands, and that their Government will sanction and protect the bargain, while the Australians feel that they are forbidden by their Government to do anything." The establishment of numerous foreign agencies among and contiguous to the British colonies is looked upon as an encroachment upon the factories and workshops of England, which should be discountenanced by all legitimate means.

Current Hardware Prices, March 11, 1885.

HARDWARE.

Avails.	Avail. Avails American.....	7	10¢-dis 20
Wright's.	96	10¢
Armstrong's Mouse Hole.	10	10¢
Armstrong's Mouse Hole, Extra.	10	10¢
Frenton.	10	10¢
Wilkinson's.	10	10¢
Anvil Vise and Drill.	10	10¢
Millers Falls Co., \$18.00.	10	10¢
Cheney Anvil and Vise.	10	10¢
Apple Parers.	10	10¢
Champion.	10	10¢
Family Bay State.	10	10¢
Gold Medal.	10	10¢
Improved Bay State.	10	10¢
Improved Bay State, with push out.	10	10¢
Jerry.	10	10¢
Little.	10	10¢
Orion.	10	10¢
Penn.	10	10¢
Triumph.	10	10¢
Turntable, Original.	10	10¢
Turntable, Improved.	10	10¢
Waverly.	10	10¢
White Mountain.	10	10¢
1878.	10	10¢
Angers and Bits.	10	10¢
First Quality.	10	10¢
Snell's.	10	10¢
Snell's, Hares.	10	10¢
Snell's, Doublet Mfg. Co.	10	10¢
Snell's, New Haven Copper Co.	10	10¢
Snell's Circular Lip.	10	10¢
Snell's, Hares.	10	10¢
Snell's Patent Single Twist.	10	10¢
Snell's Jennings' Angers and Bits.	10	10¢
Snell's Jennings' Bits (old list).	10	10¢
Snell's Jennings' Bits (new list).	10	10¢
Snell's Jennings' Bits (small list).	10	10¢
Snell's Jennings' Bits (large list).	10	10¢
Snell's Jennings' Bits (extra list).	10	10¢
Snell's Jennings' Bits (special list).	10	10¢
Snell's Jennings' Bits (premium list).	10	10¢
Snell's Jennings' Bits (exclusive list).	10	10¢
Snell's Jennings' Bits (select list).	10	10¢
Snell's Jennings' Bits (choice list).	10	10¢
Snell's Jennings' Bits (superior list).	10	10¢
Snell's Jennings' Bits (prime list).	10	10¢
Snell's Jennings' Bits (first list).	10	10¢
Snell's Jennings' Bits (best list).	10	10¢
Snell's Jennings' Bits (top list).	10	10¢
Snell's Jennings' Bits (elite list).	10	10¢
Snell's Jennings' Bits (noble list).	10	10¢
Snell's Jennings' Bits (excellent list).	10	10¢
Snell's Jennings' Bits (super list).	10	10¢
Snell's Jennings' Bits (extraordinary list).	10	10¢
Snell's Jennings' Bits (phenomenal list).	10	10¢
Snell's Jennings' Bits (marvelous list).	10	10¢
Snell's Jennings' Bits (astounding list).	10	10¢
Snell's Jennings' Bits (incredible list).	10	10¢
Snell's Jennings' Bits (unbelievable list).	10	10¢
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Snell's Jennings' Bits (extraordinary list).	10	10¢
Snell's Jennings' Bits (phenomenal list).	10	10¢
Snell's Jennings' Bits (marvelous list).	10	10¢

B. Braces.

S. S. Backus.....	dis	50	\$10 00
Barber's.....	dis	40	\$6 50
Barber's, old style.....	dis	50	\$8 00
Best Patent Braces.....	dis	55	\$10 00
Jes' Patented Braces.....	dis	55	\$10 00
Common Ball, American.....	dis	55	\$10 00
Bartholomew's, Nos. 27, 29.....	dis	50	\$8 00
Bartholomew's, Nos. 117, 118, 119.....	dis	60	\$9 00
Best Patent Braces.....	dis	55	\$10 00
Ambion's Corner Brace.....	dis	30	\$10 00
Universal.....	dis	55	\$10 00
Buffalo Ball.....	dis	40	\$6 50

Brackets.

Shelf, plain.....	dis	60	\$10 00
Shelf, fancy.....	dis	60	\$10 00
Reading, plain.....	dis	60	\$10 00
Reading, fancy.....	dis	60	\$10 00

Bright Wire Goods.

List of June 25, 1883.....	dis	70	\$10 00
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Broilers.—Hens' Self-Basting.

Per doz.....	9	10	9 x 11
For doz.....	4.50	5.50	6.50

Bull Rings.

Union Mfg. Co.'s.....	dis	55	\$5 00
Sargent's.....	dis	60	\$10 00
Hutchinson's low lat.....	dis	50	\$8 00
Peck, Stow & W. Co.'s.....	dis	50	\$10 00

Butts.

Wrought Brass.....	dis	80	\$8 00
Cant Brass, Tiebolt's.....	dis	20	\$10 00
Pail Points, Broad, No. 1.....	dis	20	\$10 00
Cant Brass, Loose Joint.....	dis	10	\$10 00
Fast Joint, Narrow.....	dis	60	\$10 00
Loose Joint, Broad.....	dis	60	\$10 00
Loose Joint.....	dis	70	\$10 00
Loose Joint, Japanese.....	dis	70	\$10 00
Parliament Butts.....	dis	70	\$10 00
Mayer's Hinges.....	dis	70	\$10 00
Loose Pin, Acorns, Jap'd.....	dis	70	\$10 00
Loose Pin, Acorns, Jap'd, Plated Ties.....	dis	70	\$10 00

Cast Iron.

Lat. Joint, Narrow.....	dis	60	\$10 00
Fast Joint, Lat. Narrow.....	dis	60	\$10 00
Loose Joint, Broad.....	dis	60	\$10 00
Loose Joint, Broad.....	dis	60	\$10 00
Tailie Butts, Rack Flaps, &c.....	dis	60	\$10 00
Dent, Double, Corbin's.....	dis	60	\$10 00
Inside Blind, Light.....	dis	60	\$10 00
Loose Pin, Wrt.....	dis	60	\$10 00
Loose Pin, Wrt.....	dis	60	\$10 00

Spring Hinges.

Gee's Spring and Blank Butts.....	dis	25	\$5 00
Union Spring, Japan.....	dis	25	\$5 00
Union Spring Hinge Co.'s.....	dis	25	\$5 00
American Spring Hinge Co.'s.....	dis	25	\$5 00
Rarker's Double Acting.....	dis	25	\$5 00
Union Mfg. Co.'s.....	dis	25	\$5 00
Buckman's.....	dis	25	\$5 00
Empire.....	dis	25	\$5 00
Climax.....	dis	25	\$5 00
Chicago.....	dis	25	\$5 00

Blind Butts.

Palmer.....	dis	50	\$10 00
Butts, Seymour.....	dis	70	\$10 00
Butts, Nicholson.....	dis	45	\$10 00
Butts, Huffer.....	dis	50	\$10 00
Butts, Manhattan Hardware Co.'s.....	dis	50	\$10 00
Butts, Sargent's, Nos. 1, 3.....	dis	75	\$10 00
Butts, Sargent's.....	dis	75	\$10 00
Butts, Shepherd's "Noisless," Nos. 50, 60, 65, 66 and 68.....	dis	75	\$10 00
Butts, Shepherd's "Queen City Gravity," No. 75.....	dis	80	\$10 00
Butts, Shepherd's "Gravity," Nos. 80 and 85.....	dis	80	\$10 00

North's Automatic Blind Fixtures, No. 2, for Wood,

No. 3, for Brick, \$10.50.....	dis	80	\$10 00
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Shepard's "Queen City Reversible,"

No. 8, for Wood.....	dis	70	\$10 00
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Butcher's Cleavers.

Johnson & Beckley Mfg. Co.'s.....	dis	30	\$5 00
Bradley's.....	dis	25	\$5 00

Calipers.

On Openers.....	dis	40	\$5 00
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Designers' Comet.....

American.....	dis	25	\$5 00
Duplex.....	dis	25	\$5 00
O. S. French.....	dis	25	\$5 00
O. S. French.....	dis	25	\$5 00
Cardinal Scissors.....	dis	25	\$5 00
World's Best.....	dis	25	\$5 00
Domestic.....	dis	25	\$5 00
Hampton.....	dis	25	\$5 00

Cups—Percussion, \$1000.

Kings & Goss.....	dis	50	\$10 00
E. B. Trimmed Edge, 1-10's.....	dis	25	\$5 00
E. B. Trimmed Edge, 1-10's.....	dis	25	\$5 00
E. B. Ground Edge, Central Fire, 1-10's.....	dis	25	\$5 00
Musket Waterproof, 1-10's.....	dis	25	\$5 00
G. D.....	dis	25	\$5 00
B. Genuine Imported.....	dis	25	\$5 00
S. R. H.....	dis	25	\$5 00
M. C. F. L. Ground.....	dis	25	\$5 00
M. C. F. L. Ground.....	dis	25	\$5 00
M. C. F. L. Ground.....	dis	25	\$5 00
M. C. F. L. Ground.....	dis	25	\$5 00

Cartridges.

List of Jan. 1, 1884.....	dis	50	\$10 00
Central Fire.....	dis	30	\$10 00
Clay, Brass Shells.....	dis	30	\$10 00
Clay, Brass Shells, 1st quality.....	dis	30	\$10 00
Clay, Brass Shells, 2d quality.....	dis	30	\$10 00
Clay, Paper Shells, No. 12, 1st quality.....	dis	30	\$10 00
Clay, Paper Shells, No. 12, 2d quality.....	dis	30	\$10 00
Clay, Paper Shells, No. 12, 3d quality.....	dis	30	\$10 00

Cards and Curry.....

New list, Aug. 1883.....	dis	10	\$10 00
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Cast Steel, Polished.....

Lat Iron, Steel Points.....	dis	15	\$10 00
Rollers.....	dis	25	\$5 00

Carpet Sweepers.

Model No. 5.....	dis	17	\$10 00
Model No. 12.....	dis	17	\$10 00
Model No. 12 Hall Sweeper.....	dis	17	\$10 00
Model No. 12.....	dis	17	\$10 00
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Casters.

Model No. 12.....	dis	17	\$10 00
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Cattle Leaders.

Model No. 12.....	dis	17	\$10 00
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Chain.

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Chalk.

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Clamps.
Pain, Prudence Tool Co.'s Wrought Iron. ds 25
Iron, Adjustable, Gray's. ds 20
Iron, Adjustable, Lambert's. ds 20
Iron, Adjustable, Snow's. ds 13
Iron, Adjustable, Hamner's. ds 13
Iron, Adjustable, Stearns'. ds 20
Iron, Adjustable, Sargent's. ds 20
Iron, Carriage Makers', Sargent's. ds 65A102
Iron, Eberhard Mfg. Co. ds 1985 @ 40K10
See Vices. See Vices.

Clips, Axle.
Norway or Best. ds 60K10
Superior. ds 70K10

Coal Vases.
Buffalo Palace, S. S. & Co. ds 30A10
Common, S. S. & Co. ds 50

Cockeys.
Cocks. Brans. ds 65A75
Racking. ds 65A75
Plain Bibbs. ds 65A75
Ale and Beer. ds 60K20
Beehive. ds 60K20
Board and Box. ds 40A102
Scleror's Patent. \$0.50, \$1.00, 50. ds 25
Scleror's Patent. ds 25
The Swift Lane Bros. ds 20
Webb's Patent. ds 45

Compasses, Dividers, &c.
Compasses. ds 60K10K5
Calipers. ds 60K10K5
Dividers. ds 60K10K5
Bemis & Call Co.'s Compasses & Calipers. ds 50K5
Bemis & Call Co.'s W. P. Inside or Outside. ds 50K5
Bemis & Call Co.'s Double. ds 50K5
Bemis & Call Co.'s (Call's Patent Inside). ds 50K5
Excelsior. ds 50K5
Sargent's. ds 50K5
J. Stevens & Co.'s Calipers and Dividers. ds 25A10

Coppers' Tools.
Barton's. ds 25
L. & J. J. White. ds 20K5
Sargent's. ds 20K5
John Reedy & Co. ds 35K5

Corkscrews.
Hanson & Cockley Mfg. Co. ds 40
Clough's Patent. ds 35K5 @ 35K5A5

Corn Knives and Cutters.
Sargent's. ds 10
Wadsworth. ds 10

Cradles.
Craw Bars. ds 40A5
Iron, Steel. ds 40A5

Curry Combs.
Fitch's. ds 50A10
Hotchkiss, Novelty, new list, July, 1885. ds 35K5
Hudson, Excelsior Supr. Champion. ds 35K5
Rubber. \$ doz 10.00, ds 25 @ 30

Curtain Pins.
Sargent's. ds 15K50, No. 2, 15.00, No. 3, 15.00, No. 4, 15.00
White Enamel. ne

Cutlery.
American Pocket. Net price
American Table. Net price
Wostenholme. \$7.75 @ \$8.00 to 10.00

Door Collars.
Embossed Gilt. ds 30A10
W. D. & Co. Bros. ds 40K10
Brass. ds 40K10

Door Springs.
No. 1, No. 2, regular size. \$ doz \$3, ds 25
Gray's. \$ doz, \$20.00, ds 20
Beed Rod. \$ doz, \$20.00, ds 20
No. 1, No. 2, \$ doz, \$2.50; No. 2, \$3.50. ds 40A10
Gen Collar. ds 40A10
No. 1, Large Japanned. \$ doz \$4.00
No. 2, Medium Japanned. \$ doz 2.75, ds 50A10
No. 3, Small Japanned. \$ doz 2.00, ds 50A10
Star (Collar) For Cop'd Nickel-Plated, &c, see list.
No. 4, "Shoo Fly" Screen Door size, \$ doz 1.50
No. 5, Screen Door size. \$ doz 3.00, ds 10
No. 6, Medium. \$ doz 2.75 (60)
No. 7, Large. \$ doz 4.00
Vance's. ds 40A10K10
Champion (Coll). ds 50K10 @ 50K10A10
Philadelphia. 5 in., \$5.00 8 in., \$7.75, ds 35
No. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492,

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Wire Cloth and Hat, Milne's Pat. Solid Brass, \$4.00 75
gros. 25 25
Tubular Standard No. 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832

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WHOLESALE METAL PRICES, March 11, 1885.

METALS.

IRON.—Duty: Bars, 8-10¢ to 11-10¢; provided that no Bar Iron shall pay a less rate of duty than 55¢. Sheet, 11-0¢ to 15-10¢. Band, Hoop and Coil, 1¢ to 1-10¢. Railroad Bars weighing more than 35 lb. per yard, 7-10¢ to 1¢.

Standard American Pig Iron.

Foundry No. 1 X... 18.00 @ 19.00
Foundry No. 2 X... 17.00 @ 18.00
Gray Forge... 16.00 @ 17.00

No. 1 Scotch Pig Iron.

Carbide... 19.50 @ 20.50
Cottrell... 21.50 @ 22.00
Shotts... 21.50 @ 22.00
Glenbrook... 21.50 @ 22.00
Langdon... 21.50 @ 22.00
Summerlee... 21.50 @ 22.00
Dalmellington... 21.50 @ 22.00
Eglington... 21.50 @ 22.00
Clyde... 21.50 @ 22.00

Rails.

Steel, at Eastern mills... 17.00 @ 17.50
Old Rails, Ts... 17.00 @ 17.50

Scrap.

Wrought, per ton, from yard... 18.25 @ 19.00

Bar Iron from Store.

Common Iron... 1.50 @ 1.9¢
1 to 6 in. x 3/4 to 1 in. ... 1.50 @ 1.9¢

Refined Iron... 1.50 @ 1.9¢
3/4 to 2 in. round and square... 1.50 @ 1.9¢

1 to 6 in. x 3/4 to 1 in. ... 1.50 @ 1.9¢
Rods—5/8 and 1-1/2 round and sq. ... 2.00 @ 2.50

Bands—1 to 6-3/8 to 10 in. ... 2.00 @ 2.50
Burden's Best "H. B. & S." Iron, base price... 2.00 @ 2.50

Norway Nail Rods... 2.00 @ 2.50

Sheet Iron from Store.

Common American... 2.00 @ 2.50
Nos. 10 to 16... 2.00 @ 2.50

17 to 20... 2.00 @ 2.50
21 to 24... 2.00 @ 2.50
25 and 26... 2.00 @ 2.50

27... 2.00 @ 2.50
28... 2.00 @ 2.50
29... 2.00 @ 2.50

Galvanized, 10 to 30... 2.00 @ 2.50
Galvanized, 21 to 24... 2.00 @ 2.50

Galvanized, 25 to 26... 2.00 @ 2.50
Galvanized, 27... 2.00 @ 2.50

Galvanized, 28... 2.00 @ 2.50
American Russia... 2.00 @ 2.50
American Cold Rolled B. B. ... 2.00 @ 2.50

Iron Wire. See Wire.

STEEL.—Duty: Ingots, Bars, Sheets, &c., valued at 4¢ per lb. or less, 4¢ ad val.; valued above 4¢ and not above 7¢ per lb., 2¢ ad val.; valued above 7¢ and not above 10¢ per lb., 2¢ ad val.; valued above 10¢ per lb., 3¢ ad val. Steel Bars, Rods, &c., cold hammered or polished, in any way in addition to ordinary hot rolling, 1¢ per lb. in addition to the above.

Steel Circular Saw Plates, 1¢ per lb. in addition to the above.

American Cast Steel.

For American Steel, see Pittsburgh quotations.

English Steel.

Best Cast... 15.00 @ 16.00
Extra Cast... 16.00 @ 17.00

Circular Saw Plates... 14.00 @ 15.00
Round Machinery Cast... 14.00 @ 15.00

Swaged Cast... 14.00 @ 15.00
Best Double Shear... 14.00 @ 15.00

Blister, 1st quality... 14.00 @ 15.00
German Steel, Best... 14.00 @ 15.00

2d quality... 14.00 @ 15.00
3d quality... 14.00 @ 15.00

Sheet Cast Steel, 1st quality... 14.00 @ 15.00
2d quality... 14.00 @ 15.00

3d quality... 14.00 @ 15.00
TIN.—Duty: Plates, Sheets, Taggers and Termes, 1¢ per lb. Bars, Block and Pigs free.

Banca... 10.00 @ 11.00
Straits... 10.00 @ 11.00

English... 10.00 @ 11.00
Bar... 10.00 @ 11.00

Charcoal Tin Plates.

1 C 10x14... 25 sheets... 5.00 @ 5.75
1 C 12x12... 25 sheets... 5.00 @ 5.75

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Block Tin Pipe... 15¢ dis 20¢
Tin Lined Pipe... 15¢ dis 20¢
Sheet... 15¢ dis 20¢

Shot... 15¢ dis 20¢
Drop, 6¢; Buck, 7¢

ANTIMONY... 10¢ @ 10 1/2¢
Hallett's... 10¢ @ 10 1/2¢
Cookson... 10¢ @ 10 1/2¢

SPELTER—Duty: Pigs, Bars and Plates, \$1.50
per 100 lbs.

American, cash... 4¢ @ 5¢
Bergenport... 4¢ @ 5¢

ZINC—Duty: Pig or Block, \$1.50 per 100 lbs.
Sheet, 2¢ @ 3¢

600 Pounds... 5¢ @ 5 1/2¢
Zinc—Open... 5¢ @ 5 1/2¢

Zinc Tubing—Dis. 25 s... 5¢ @ 5 1/2¢

Plain... 27¢
Fancy... 28¢

Scotch and Extra Patterns... 36¢

SABBIT METAL... 10¢ @ 10 1/2¢
N. P. U... 10¢ @ 10 1/2¢

X... 10¢ @ 10 1/2¢
J. B... 10¢ @ 10 1/2¢

WIRE... 10¢ @ 10 1/2¢

Market Wire—Put up in 63 lb bund. as... 10¢ @ 10 1/2¢

Nos. 00 to 9, 10, 11, 12, 13, 14, 15, 16, 17, 18... 10¢ @ 10 1/2¢

Bright Market Wire... 10¢ @ 10 1/2¢
Charcoal... 10¢ @ 10 1/2¢

Bale Wire, Nos. 7 to 12... 10¢ @ 10 1/2¢
Annealed Market Wire... 10¢ @ 10 1/2¢

Fence Wire, Nos. 8 and 9... 10¢ @ 10 1/2¢
Grape Wire, Nos. 10 to 14... 10¢ @ 10 1/2¢

Coppered Market Wire... 10¢ @ 10 1/2¢
Bale Wire, Nos. 7 to 12... 10¢ @ 10 1/2¢

Galvanized Market Wire... 10¢ @ 10 1/2¢
Fence Wire... 10¢ @ 10 1/2¢

Stone or Weaving Wire... 10¢ @ 10 1/2¢
Nos. 16 to 18... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 19 to 20... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 21 to 22... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 23 to 24... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 25 to 26... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 27 to 28... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 29 to 30... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 31 to 32... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 33 to 34... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 35 to 36... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 37 to 38... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 39 to 40... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 41 to 42... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 43 to 44... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 45 to 46... 10¢ @ 10 1/2¢

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Nos. 61 to 62... 10¢ @ 10 1/2¢

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Nos. 63 to 64... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢
Nos. 65 to 66... 10¢ @ 10 1/2¢

Cents... 10¢ @ 10 1/2¢<

INDUSTRIAL ITEMS.

NEW YORK.

Hall's Engineering Company, of 112 John street, New York City, have recently made arrangements with Messrs. Ripley & Kimball, of St. Louis, Mo., to represent them in that city. The company report a large order for injectors from their newly-appointed representatives, together with others from parties in Chicago and the South.

DELAWARE.

The Seidel & Hastings Company, of Wilmington, are running their mills to full capacity, and have done so continuously since last August. Their specialty is a high grade of boiler plate, for which they have a good demand.

PENNSYLVANIA.

The rumor that the Pennsylvania Diamond Drill Company had decided to remove their works from Pottsville to Birdsboro is denied by the superintendent, who says that, while a removal has been for some time contemplated, no decision has been reached, and the works will probably remain in Pottsville.

Dunbar Furnace stopped last week, owing to shortage at their ore pile. The difficulty seems to be a scarcity of miners.

It is reported that Reynolds Brothers, proprietors of Red Bank Furnace, on the Allegheny River, in Clarion County, will resume operations at the works April 1. The furnace has been idle since June, 1883.

The Bryden Horse-Shoe Works, Limited, of Catasauqua, have started up under the superintendency of Mr. T. F. Frederick, who has been the clerk of the company from the organization. These works give employment to quite a number of hands.

The nail factory of the E. & G. Brooke Iron Company, at Birdsboro, turned out for the month of February 18,902 kegs of "Anchor" brand nails.

It is stated that the Shawnee Rolling Mill, at Columbia, has changed hands, and will be put in operation shortly.

The postponed sale of the personal property of the Coatesville Iron Company took place last Thursday. The pig iron brought on an average about \$15.50 per ton. The mills, or a portion of them, will be started between now and April 1, under the management of Mr. W. J. Carmichael, with the former superintendent. The new firm will take the name of the Coatesville Iron Works.

Joanna Furnace is being relined, and in the interim a large amount of wood is being cut for coal.

The firm of William M. Kaufman & Co., of Reading, proprietors of the Sheridan, Ringgold and Tipton iron furnaces, has undergone a change. The interest of Gen. E. B. Grubb has been purchased by Isaac Eckert, son of Henry S. Eckert, and the firm's members now are: Henry S. Eckert, William M. Kaufman and Isaac Eckert. The firm name will be changed to the Tipton Furnace Company.

Windsor Furnace, in Berks County, at the foot of the Blue Mountain, about 2 miles from Hamburg, formerly operated by Daniel B. Fisher, of Leesport, who made an assignment, may resume operations in the spring. Mr. Fisher is endeavoring to effect a settlement with all his creditors, and if successful he will resume.

On March 2 the night turn at the nail factory of the Pottstown Iron Company cut 1025 kegs of nails, the largest number ever cut before being 956 kegs. The number of machines in operation was 88, and the largest number of kegs cut by any one feeder was 98 kegs of 6-inch spikes.

PITTSBURGH AND VICINITY.

Penny, Mulholland & Co. have leased ground in the Third Ward, McKeesport, and will at once commence the erection of a large foundry and machine shop.

A company is reported as having been formed in Allegheny, with \$50,000, to manufacture iron railroad cross-ties, for which purpose they will erect works.

On Tuesday, March 3, the boiler works of James McNeil & Brother, at Twenty-ninth street, were almost entirely destroyed by fire. A considerable amount of valuable machinery was burned. The total loss is estimated at \$10,000 or more, which is fully covered by insurance. The cause of the fire is supposed to have been a leak in the natural-gas main, though this has not been definitely ascertained.

The Cannon Natural Gas Company have struck another gas vein at a depth of 1300 feet. The pressure is the same as that obtained at their first strike.

The citizens of Canonsburg are endeavoring to raise \$2400, which is understood to be the amount necessary to induce the glass-manufacturing firm of Abel Smith & Co., of Pittsburgh, to locate in Canonsburg. Much of the money has been subscribed.

The Allegheny Steam Heating Company have announced their intention to apply for a charter. This is a twin organization with the Pittsburgh Steam Company, and will no doubt supply steam for power as well as heating purposes.

OHIO.

The Canton Car Company have discontinued the business of car building, and will in future devote themselves to other branches of manufacture.

The attachments against the Arms-Bell Company, of Youngstown, have been released by court, and the company will sue for damages.

There is at last a definite prospect that the Westlake Rolling Mill, at Warren, will be put into operation. The efforts to arrange for its operation by a co-operative association have at last materialized in the Warren Co-operative Iron Company. This company are composed of the workmen and merchants who have been agitating the matter, and have secured a loan of \$12,000. Under the agreement none of the employees will be paid until after six weeks' work, when they will be paid monthly, leaving one-third of their earnings in the hands of the financial manager. At the end of one year the loan of \$12,000 will be paid first, after that the wages left by the employees, and the surplus divided among those engaged in the investment. Mr. W. I. Metcalf, of Mineral Ridge, has been already stated in these columns, has been selected as financial manager, and his business qualifications will assist largely in making the co-operative scheme a success. It is the intention, if possible, to have the mill put in operation the first week in April.

The Ironton Furnace Company have been incorporated at Ironton by Messrs. Peters, Bird and others, and will lease, remodel, repair and operate Ironton Furnace of the New York and Ohio Iron and Steel Company, which has been out of blast for some time. The new company hope to blow in within six weeks.

Brown, Bonnell & Co. blew in their Phoenix Furnace, at Youngstown, on March 3. While blowing in the metal burst through the boshes and came near causing a serious fire, the flames, however, being extinguished before much damage was done. A very similar accident took place on March 6 at Hannah Furnace, of the Mahoning Valley Iron Company, at the same place, with similarly insignificant results.

Girard Furnace blew in on March 6.

MISSOURI.

The Parker-Russell Mining and Mfg. Co., of St. Louis, are a new organization, and will manufacture carbon pencils for electric-lighting purposes. They are at present building works.

The court has refused to appoint a receiver for the St. Louis Hot Pressed Nut and Bolt Company.

The Missouri Malleable Iron Company, of St. Louis, will soon increase their working time to 10 hours per day and will also increase their force. Their business, which is very brisk at present, is chiefly jobbing work for local machine shops.

The Wrought Iron Range Company, of St. Louis, are turning out on an average 60 of their standard "A" ranges a day, and, besides, are steadily increasing their production of extra large ranges.

ILLINOIS.

The Scranton Mfg. Co., of Chicago, have of late been increasing their capacity by the placing in of additional lathes, drills, &c. This company have, in addition to their regular line of hardware specialties, taken up the manufacture of a full line of hangers for elevator doors.

William Frech, of Chicago, is making a complete outfit of machinery for the combination-lock department of the Chicago Safe and Lock Company. Most of the machinery which this company have purchased is in position, and the works will be running by March 15.

The Lang & Smith Mfg. Co., of Chicago, have just been organized for the purpose of making a patent self-closing or automatic water-gauge. The company, who commence business with a number of orders for their gauge, have purchased new machinery, and their plant will be fully equipped.

The capacity of the Northwestern Screw Company's works, at Chicago, which are running full time, is to be increased at an early date.

The Western Steel Company's works, at Park Side, will remain closed for the present.

MINNESOTA.

Strothman Brothers, proprietors of the Standard Iron Works, Minneapolis, manufacturers of iron crusher rolls and merchant bar and refined iron, intend purchasing shears for cutting old rails, and putting in one or two bolt cutters, more forges and another heating furnace.

Press telegrams state that the St. Paul Plow Works were burned on March 3. Four buildings, with \$20,000 worth of machinery, were destroyed, and 200 hands thrown out of employment. The works will be rebuilt at once.

TENNESSEE.

The Lookout Rolling Mill, at Chattanooga, was sold on March 5, under a trust deed to secure an indebtedness. The plant brought \$20,000, and was bid in by A. A. Johnson and J. N. Haselhurst, Chattanooga capitalists. The purchase money will pay all the debts and leave a small dividend to the stockholders. The mill, which contains four double puddling furnaces and two trains of rolls, will probably open in the near future with the manufacture of merchant bar iron.

The Dayton Coal and Iron Company, Limited, in which Sir Titus Salt, of Saltaire, England, is a large stockholder, will complete one of the two large 75 x 20 foot furnaces which they are building in Rhea County about the last of June, and will probably have it in operation by July 1.

GEORGIA.

Rising Fawn Furnace, of the Walker Coal and Iron Company, at Rising Fawn, Dade County, will soon blow out for repairs, and will probably be idle two months.

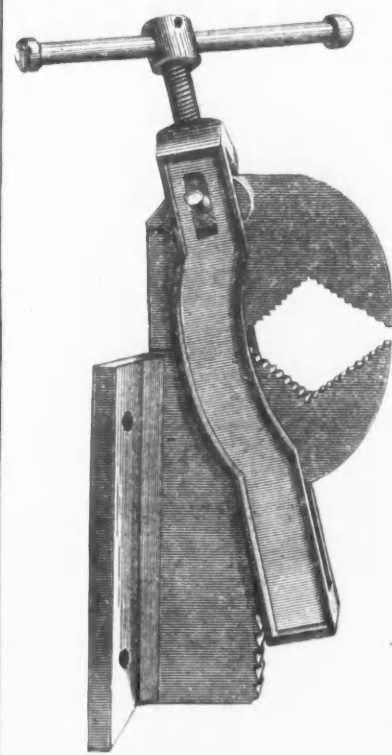
Manufacture of Liquid Gunpowder.

One of the greatest difficulties encountered in the manufacture of gunpowder is the intimate admixture of the constituent parts, the combustion of which produces the explosion. Mr. Nordenfeldt has advanced a very ingenious and rather novel idea, for which he has applied for letters patent. He proposes, instead of grinding together the primary substances—sulphur, charcoal and saltpeter—in their solid state, to employ the following process instead: Sulphur in the desired ratio is put in solution as sulphate of carbon; this is mixed with carbonaceous matter, which in this case is not charcoal, but cotton or cellulose fiber, ground to an impalpable powder. Finally, a saturated solution of saltpeter is added to this mixture in the required proportion. There remains now nothing to be done except to evaporate under disturbed crystallization—or in *vacuo*—to obtain a powder the elements of which, according to the inventor, are thoroughly mixed and therefore in condition to furnish the maximum useful effect. This is almost strictly a liquid powder which is thus obtained.

HARDWARE NOVELTIES.

The "Economy" Pipe Vise.

Mr. E. B. Knight, Hagerstown, Md., is the maker of an improved Pipe Vise called the "Economy," a view of which is shown in the annexed cut. In this vise the jaws are held in place by a movable clamp and hand-screw, the advantage of this mode of fastening being that it holds the pipe in an immovable grip, and at the same time admits of a quick release of the pipe at the

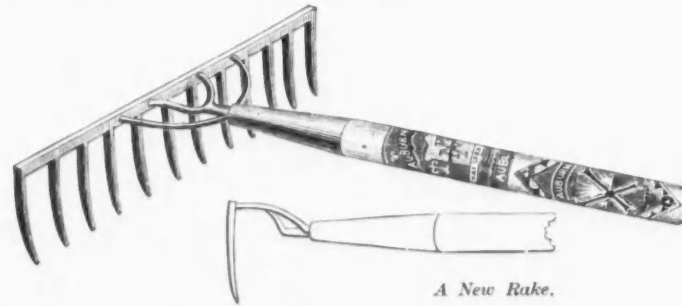


The "Economy" Pipe Vise.

side. It is claimed that this arrangement allows the pipe to be put in and taken out of the vise in one-half the time usually required. Another advantage mentioned for this vise is that in working on different sizes of pipe no time is lost in working a hand-screw up and down to make the jaws fit the pipe, as two or three turns of the hand-lever releases the clamp from its catch at the bottom, so that the upper jaw, which is carried by the clamp, can then be raised or lowered to suit any sized pipe at once. The vise takes pipe up to 2½ inches in diameter. The manner of attachment, as shown in the cut, allows the vise to be fastened to a bench or post with but little trouble. The vise is light, and is said to be strong and well made, and owing to its simplicity is comparatively inexpensive.

A New Rake.

The accompanying illustration represents a Rake made by the Auburn Mfg. Co., Auburn, N. Y., for whom Durrie & McCarty are agents, 97 Chambers street, New York City. This rake, the form of which is



A New Rake.

shown in the cut, so as to need no further description, is made of malleable iron from a cast-steel pattern, and is intended to supersede the less neat and attractive styles of cheap rakes with which the trade is familiar. The goods are very neatly finished and make a good appearance, and are spoken of as meeting the wants of the trade, and filling the place, for many purposes, of a cast-steel rake, at about half the cost. This rake is made with 10, 12 and 14 teeth, and with bright or blued taper heads. The large cut represents the general appearance of the rake, and the small cut shows the arrangement of the braces as seen in a side view.

Whitney's Meat and Fruit Press.

The cuts which are given herewith represent the above-named article, which is made by C. E. Hudson, Leominster, Mass., for



Fig. 1.—Whitney's Meat Press Complete.



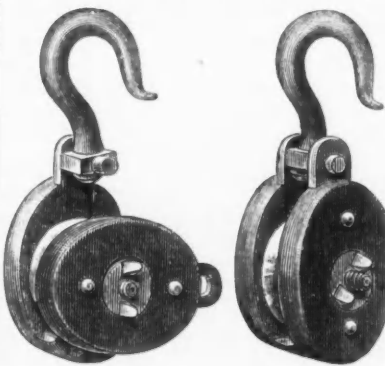
Fig. 2.—Whitney's Meat Press Taken Apart for Removal of Contents.

whom the Livingston Horse Nail Company, 104 Reade street, New York, are agents. This Press is the invention of A. R. Whitney, Leominster, Mass. Its special features are indicated in the illustrations, the press being so constructed that it can be taken apart after the meat has been pressed, and its contents then easily removed. Fig. 1 represents the press complete and Fig. 2 as taken

apart after use. From these illustrations its construction and the method of operation will be readily apprehended without a detailed explanation. It is made of malleable iron and joggled. There are two sizes, No. 1 holding 10 pounds of meat and No. 2 holding 25 pounds. The manufacturer in his circular calling attention to it alludes to the reasonable price at which it is offered, to the simplicity of its construction and to the advantage which results in its use, from the fact that it obviates the difficulty which is experienced with other presses in removing their contents. The further point also is made that the strength of the material of which the sides of this press are made, gives an advantage over other presses, which, being made of tin, are liable to bulge out under pressure. If any part is lost or broken, a duplicate, it is announced, can be furnished at short notice and trifling expense. Mr. Hudson is also the manufacturer of Apple Parers and other specialties.

Improved Snatch Block.

The accompanying illustrations represent a new Snatch Block which is made by the Detroit Block Works, Detroit, Mich., for whom John H. Graham & Co., 113 Chambers street, New York, are agents. The special feature of this block is the manner in which the cheek of the block is locked and unlocked for the purpose of reeving and unreeving the rope. The cheek is held in place, it will be perceived from an examination of the cuts, by a nut on the axle of the sheave or pin, and is unlocked and given sufficient play by unscrewing the nut so as to allow the cheek to become detached from the axle of the hook. When it is desired to close the block this operation is reversed, and when the cheek is in place it is secured by tightening the nut. By removing the nut entirely from the pin the cheek can be easily detached and a new sheave inserted to replace the old when necessary. A further advantage is also pointed out, in that a larger sheave can be used than in the ordinary snatch block.



Improved Snatch Block.

NEW PUBLICATIONS.

ELECTROLYSE (ELECTROLYSIS). By Hippolyte Fontaine. Size 6¼ x 10 inches, 296 pages. Published by Baudry et Cie, Paris, 1885.

This work is intended as a practical treatise upon electro-plating with nickel, copper, gold and silver, and the refining of

ing. Part four is devoted to the refining of metals and the treatment of ores by electricity. The book contains a number of illustrations, and the excellent style of printing, together with the fineness of the cuts, makes it far superior in general appearance to the ordinary scientific work.

STATIONARY STEAM ENGINES FOR ELECTRIC-LIGHTING PURPOSES. By Prof. R. H. Thurston. Size 5 x 7½ inches, 177 pages. Published by John Wiley & Sons. Price, \$1.50.

Professor Thurston's little work is a reprint of a series of articles which appeared originally in the *Electrician and Electrical Engineer*, and gives a most interesting and instructive account of comparatively recent changes in steam engines which have been the result of exacting conditions as to efficiency, regulation and smooth action at high rotary speeds. Starting with a brief historical sketch of the development of the steam engine, and a statement of the principles of economy, the author supplies illustrations and descriptions of a large number of those engines more particularly adapted to electric-lighting purposes. Thus we find the Corliss, the Wheelock, the Greene, Porter-Allen, Buckeye and Hartford, Cummer and many other engines treated of more or less fully, illustrations of valve and governor arrangements and other important parts being furnished in some cases, while in others, we regret to say, the reader is offered only perspective views. Notwithstanding this, however, the book contains much that is of real value, and will undoubtedly meet with well-merited success.

THE DESIGNING OF ORDINARY IRON HIGHWAY BRIDGES. By J. A. L. Waddell. Size 5¼ x 9½ inches, 244 pages. Published by John Wiley & Sons. Price, \$4.

Professor Waddell's work is one which will in every way favorably commend itself to the engineer and student, covering the ground of practical designing in all its parts, and thus supplying a large amount of information which has hitherto been difficult to obtain. It is principally a compilation of the results of investigations made by Professor Waddell during the past few years, and one of its chief objects is to reduce the labor of iron highway-bridge designing to a minimum. For this purpose everything that could be so arranged has been tabulated. Not only are the exact sizes of hip verticals, joists, door beams, beam hangers, lateral rods and struts, lattice bars, stay plates, &c., given for all practical cases, but also the most economic dimensions of panels and trusses. The whole subject has been very carefully worked out, and is presented in a manner which leaves nothing to be desired.

THE FIREMAN'S GUIDE. Translated from the Swedish, and revised by Karl P. Dahlstrom. Size 4½ x 7 inches, 26 pages. Published by E. & F. N. Spon. Price, 50 cents.

This little book was originally written and published in Sweden by a society of engineers (Teknolog Föreningen, T. I. Stockholm), and since its first appearance has been the subject of much favorable comment. It contains in a condensed form rules and directions for the general care of steam boilers, and as a means of clearly presenting the duties of a fireman will be found to offer much valuable assistance. The matter is divided up into a number of short chapters and under suitable heads, and contains practically everything that should be thoroughly familiar to any one in charge of a boiler.

CURVE TRACING. By William Woolsey Johnson. Size 5 x 7½ inches, 86 pages. Published by John Wiley & Sons. Price, \$1.

This book, as the author remarks in the preface, relates not to the general theory of curves, but to the definite problem of ascertaining the form of a curve given by its equation in Cartesian co-ordinates, in such cases as are likely to arise in the actual applications of analytical geometry. The methods employed are exclusively algebraic, and no knowledge of the differential calculus on the part of the student is assumed. It has been endeavored to make the treatment of the subject thus restricted complete in all essential points, without exceeding such limits as its importance would seem to justify. Lists of examples for practice will be found at the end of each section. These examples have been selected from various sources and classified in accordance with the subjects of the several sections.

The German Patent Office.—The same complaints which have annually been made in regard to the management of our Patent Office and its financial affairs are re-echoed from Germany. The estimates allowed for the German Patent Office for the coming year are 716,300 marks, so that there will be a surplus of about 600,000 marks. In spite of this the official force is small and poorly paid, and it has been found necessary, in order to do the enormous amount of work which the examination of technical literature involves, to appoint 22 technical assistants. This extra staff consists generally of young, inexperienced engineers, the only ones whom the low salaries and uncertain tenure of office could tempt.

One very important result of the current efforts to make quick Atlantic voyages is the schooling in accurate methods and correct principles of working the great ships in which all concerned have had a part, and by which they have profited. Many employers of labor on shore know well that rigid accountability on the part of their employees is the secret of success in the economy of their business, but few employers can hold their people to the absolute limit of quantities of fuel and of work done to which ocean crews are kept. It is not enough to say that these ships are cleaned and put in perfect order at great expenditure of labor before each voyage, and that hence they can nearly run themselves in this respect. However true this may be, the maintenance of close economy depends also upon the correct burning of each bucket of coal in its turn, and so long as human nature among firemen and coal-heavers is such as it is, the excellent work done on these ships must be due to some one or two men who have learned what rigid economy is, and who are able and willing to practice it day after day.

A Comprehensive Patent Specification.

It is well known that, in theory, at all events, only one invention can be covered by a patent in this country. On February 1 of last year Mr. C. A. Mayrhofer, of Vienna, took out a United States patent, No. 299,663, for "mechanism for automatically casting and recording ballots, actuated by the pressure or expansion of a fluid." The specification is a reasonably lengthy document, but the curious part of the affair is that, while there are no fewer than 64 separate claims, many of them long and complex, Mr. Mayrhofer has obviously succeeded in satisfying the authorities that they cover only one invention. This is certainly a triumph of specification drawing, and reflects the greatest credit on the inventor's agent. When, however, we attempt to contemplate the results which would follow on litigation, we stand appalled. We reproduce a couple of the claims taken at hazard. Claim 12 runs: "In a system of balloting, the combination with mechanism whereby a ballot is cast or delivered from a holder, mechanism whereby a permanent record of the delivered ballot is simultaneously produced, both operated by the pressure or expansion of a fluid, and a suitable distributing-pipe and main connected together and with said mechanism, of a valve interposed in the main and distributing-pipe or pipes, whereby communication between the two is established or cut off and the fluid exhausted from the distributing-pipe, for the purposes described."

Claim 13 of this unique production is: "In a balloting system, the combination of mechanism whereby a ballot is cast or delivered from a holder, mechanism whereby a permanent record of the delivered ballot is simultaneously produced, appliances for operating said mechanisms by the pressure or expansion of a fluid, a suitable fluid-distributing pipe or pipes and main, and mechanism actuated by the delivered ballot, whereby said ballot is counted, with a valve interposed in said main and distributing-pipe, whereby the fluid is admitted to the distributing-pipe from the main, to actuate the ballot-delivering and permanent-record producing mechanisms, whereby a ballot is delivered from its holder, a permanent record thereof made, and the ballot counted simultaneously, for the purposes specified." The success of the inventor in obtaining a patent with so many claims in the specification could not be achieved without a system, and the claims we have quoted supply a clew to the system. It is nearly identical with that on which the celebrated idyl, "This is the house that Jack built," was constructed, and may be applied to a steam engine, for example, in the following way: "I claim this engine that I invented; I claim this cylinder of this engine that I invented; I claim this piston that works in this cylinder of this engine that I invented; I claim this piston-rod that is fixed in this piston that works in this cylinder of this engine that I invented; I claim this crosshead that is keyed on this piston-rod that is fixed in this piston that works in this cylinder of this engine that I invented," and so on. We imagine that something must be gained by sending in a multitude of claims. Such a specification as that of Mr. Mayrhofer is, indeed, enough to frighten a staff of examiners out of their wits.

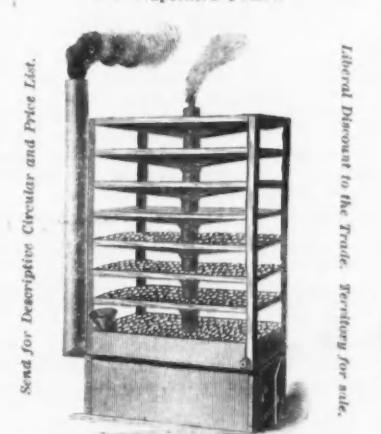
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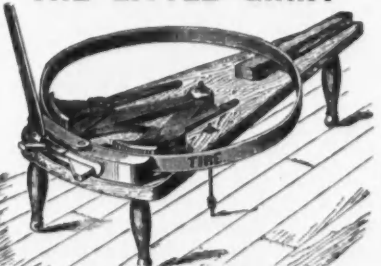
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CHEAP X'S & 10 BARKER BRACE.

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Improved Ice Crusher

FOR 1885.

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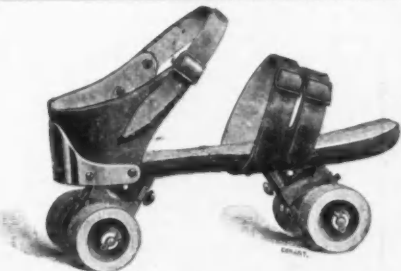
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BEST IN THE WORLD.

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A guard for attachment to any style Wire Fence (old or new), making it visible and thus protecting cattle from injury. This guard removes the only objection to this style of fencing.

(THIS CUT IS TWO-THIRDS OF ACTUAL SIZE.)

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BEARING DOOR MANGERS

For House Doors, Car Doors, Elevator Doors.

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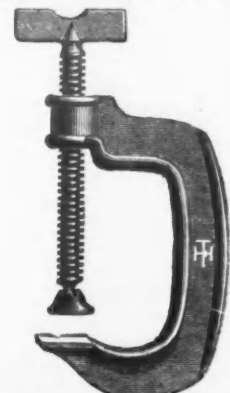
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NEW pattern Heavy Screw Clamps strongest in the market.



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BELT FASTENERS



Are positively unequalled for fastening LEATHER, RUBBER or COTTON BELTING.
THE ONLY FASTENER that will run under tighteners on patent rolls in flour mills and Electric Light machines.
EASIER TO APPLY THAN LACINGS AND FAR MORE ECONOMIC.

Pat. Sep. 20, '81; Aug. 15, '82;
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Combination Punch, with guides and nippers, 1.25
Reamers for taking fasteners out, .35
TRY THEM. They will save you loss of TIME, TEMPER and MONEY. Manufactured by

H. D. EDWARDS & CO.

Nos. 16, 18 & 20 Woodward Ave., Detroit, Mich.
Manufacturers of Oak Leather Belting; Agents
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Cut one-half size.

ACME CHILLED ANTI-FRICTION HAY FORK PULLEY.



Sectional view. In putting this Pulley on the market, we do so with confidence, believing there is not a Pulley made as good. The bearings are both Chilled, which makes them as hard as Cast Steel, and must be very durable. The bearings not being large, and Chilled as they are, if any Pulley is anti-friction this is. It can be used very easily, as you will see by the cut. By being put together with one bolt, in case one piece should be broken it can be replaced with a new piece. There is not a Pulley made that runs as easy. Packed in barrels or boxes—5-inch in boxes, 2 dozen each; 7-inch in boxes, 1 dozen each. Manufactured by

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IMPROVED UNDER PATENTS OF 1875 AND 1876.

Safety Economy in Fuel, Low Cost of Maintenance Dry Steam without Superheating, Large Reserve Power

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3000 Horse-Power in Progress and for Immediate Delivery. Correspondence Solicited.

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★ N. Y. S. S. P. Co. ★ STEAM ENGINES ★

NORFOLK, VA., NOV. 28, 1884.

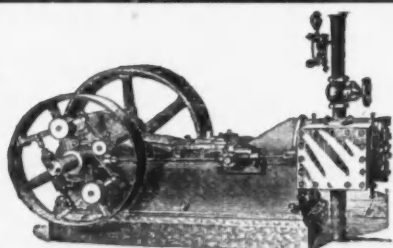
New York Safety Steam Power Co., New York:

DEAR SIR:

The 12" x 12" Horizontal Engine which you sent us nearly one year ago has been in continual night service ever since, with the exception of a few nights each month. We find it drives three No. 7 Brush Arc Dynamos with steadiness and economy, and so far has required little or no repairs. It is belted direct to the dynamos and makes about 240 revolutions per minute with 80 lbs. steam pressure at the boiler, developing about 66 H.P. The Dynamos supply current for 120 Brush Arc Lamps of 1200 candle-power, and furnish satisfactory Street Lights for this city.

Yours very truly,

(Signed) BRUSH-SWAN ELECTRIC LIGHT CO.,
WM. W. CHAMBERLAIN, Pres't.



Horizontal Automatic Cut-Off Engine, 25 to 200 H.P.

NEW YORK SAFETY STEAM POWER CO., E. T. COPELAND, General Agt., 30 Cortlandt St., New York City.
The productions of this company have been in the market for fifteen years, and enjoy the reputation of being eminently first class.

OFFICE OF THE NEW YORK STEAM CO.,
22 CORTLANDT ST., NEW YORK, JAN. 3, 1885.
N. Y. Safety Steam Power Co., 30 Cortlandt St.,
N. Y. City:

GENTLEMEN:

We have had in use one of your 8" x 9" Horizontal Automatic Cut-Off Engines since June 26, 1884, operating Dynamos supplying 60 to 100 Incandescent Electric Lights both day and night. The engine was used also for a short time in making tests of a 300 Electric Light Dynamo machine and developed for a portion of the time thirty-nine and four-tenths (39.4) horse-power. The engine has operated to our entire satisfaction.

Yours truly,

CHAS. E. EMERY, Eng'r and Supt.

MANUFACTURERS OF AND
DEALERS IN ALL
KINDS OF
FOUNDRY FACINGS

**PLUMBAGO OR BLACK
LEAD**

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Capacity, 650 Barrels
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**HEAVY MACHINERY
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STOVE PLATE FACINGS**

A Specialty.

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A. F. PIKE MFG. CO.,

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Cable Address, "Pike, Haverhill."

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The Largest Manufacturers and Dealers in Stones for
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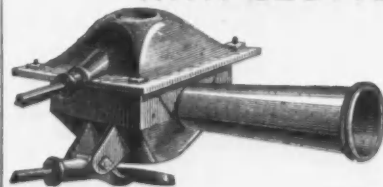
Pike's celebrated Blue Stone, Indian Pond (Red End), Lamotte, Black Diamond, Magic, Green Mountain. All kinds branded with our name are genuine.

Also, Oil, Water and Dry Whetstones: Arkansas, Washita, Turkey, Hinoctan and Sandstone Razor Stones, Vienna Cigar-shape.

In fact, everything that is used for sharpening Edge Tools supplied in any size or shape required. Quality and Price guaranteed. Send in your orders.



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WITH SLOTTED BALL VALVE.**



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Frame and Axle Pulleys, Hat and
Coat Hooks, Shelf Brackets, Locks,
Mineral and Porcelain Door Knobs,
AND A LARGE LINE OF BUILDERS' HARDWARE.

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The Canadian Budget.

Sir Leonard Tilley, the Canadian financial minister, on the 3d inst. presented his budget, indicating the policy of the Government for the coming year. The address for the most part consists of a labored defense of the administration, the main point being to confirm the allegation that, despite a greatly increased expenditure, taxation is not increased and that the financial condition of the Dominion is sound. The larger expenditure for 1884, he contended, "instead of representing an increased taxation to the country, means an increased business and reduced taxation, because the deficit has been reduced from \$600,000 to \$150,000 annually," as compared with several former years.

In regard to foreign trade, the minister showed that under the present protective policy there had been an increase in the last five years of \$15,000,000 in the trade with Great Britain—from \$200,000,000 from 1874 to 1878, to \$224,000,000 from 1879 to 1884—while there were imported from the United States \$220,865,000 in the latter period, against \$240,559,000 in the previous period, showing a decrease of \$19,694,000. It was also shown, in respect to the balance of trade, that notwithstanding the exceptionally heavy imports recently of materials and supplies for the Canadian Pacific Railway, the imports for the period between 1874 and 1879 were greater than the exports by \$105,110,076, while during the five following years the excess of imports over exports was only \$82,000,000, a falling off, the minister argued, which shows a marked change in favor of the Dominion, considering the larger increase in trade during the last five years.

Domestic manufactures, it is contended, have received a considerable impetus, the number of hands employed now being 77,346, as compared with 42,794 in 1878, while the capital now invested is \$672,293,373, against \$578,199,931.

From the foregoing the Minister of Finance claims that the credit of the country stands better to day than ever before, which statement is in strong contrast with frequent intimations received for some months past, such as are commonly attributed to inimical sources—either rival railroad managers or speculators interested in loans.

Numerous tariff changes are proposed, none of them radical, but all in the direction of further protection to manufacturers, doubtless intended to replenish the Treasury and at the same time stimulate local enterprise. As affecting metals, we notice the following amendment of the tariff of customs duties and schedule of free goods:

First.—By adding to the free list, Schedule B, the following articles now admitted free by Orders in Council under the authority of Sub-section 12 of Section 230 of the Customs act, 1853:

Steel, imported for use in the manufacture of skates. Tagging metal, plain, japanned or coated, in coils not over 1½ inches in width, when imported by manufacturers. Hoop iron, not exceeding ¾ inch in width, and being No. 25 gauge or thinner, used for the manufacture of tubular rivets. Silver and German silver, in sheets, for manufacturing purposes. Steel, of No. 20 gauge and thinner, but not thinner than No. 30 gauge, to be used in the manufacture of corset steels, clock springs and shoe shanks, when imported by the manufacturers of such articles for use in their factories. Steel, in sheets of not less than 11 nor over 18 wire gauge, and costing not less than \$375 per ton of 2240 pounds, when imported by manufacturers of shovels and spades for use exclusively in such manufacture in their own factories.

Second.—By repealing all duties chargeable under any act now in force on any of the articles hereinafter mentioned, and substituting therefor the rates of duty specified:

Cutlery, not otherwise provided for, 25 per cent. ad valorem. House-furnishing hardware, 30 per cent. ad valorem. Chains, iron or steel, over ½ inch in diameter, 5 per cent. ad valorem. Sheet iron, hollow-ware, and all manufactures of sheet iron not elsewhere specified, 25 per cent. ad valorem.

Conspicuous for their absence from the general statement are the financial status and entanglements of the Pacific Railway, and the designs of the Government with reference to the Welland Canal enlargement, &c. Sir Richard Cartwright, of the opposition, took exception to various points so far as to affirm that the foreign trade of the country had not increased in the last 11 years; that trade with Great Britain was declining, while that with the United States was increasing, while the debt in six years had apparently increased about 60 per cent. The taxes, he affirmed, were 150 per cent. more than they were when he (Cartwright) was in power. To reconcile the conflicting views might be a difficult undertaking.

The Bellaire Steel Works—The steel works built in connection with the Bellaire Nail Works, of Bellaire, Ohio, consist of two 5-ton converters, two blowing engines, two hydraulic pumps, two 84-inch cupolas, one reversible blooming mill, four batteries of double-flue boilers, three in each battery, four Wellman cranes and a steam hoist at the cupolas, which are blown by a No. 10 Sturtevant fan. The works started up last April, and have been running single turn until a week ago, when they started double turn. The works have during the greater part of the time run also on an experimental basis, meeting and overcoming difficulties, of which many were due to inexperience in the management. The product is now about 200 tons of nail slabs per day, which, it is expected, will be increased at an early date to 250 tons per day. The nail works of the Bellaire Nail Works use 65 tons per day, and there is no difficulty in disposing of the balance to other nail works. Very little trouble has been experienced in attaining uniformity in the quality of the product. The variations in the carbon contents rarely exceed .03 per cent., ranging from .07 to .1, though the usual limits are .08 to .1. Thus far the Bellaire works have been making their own pig, selecting such Lake Superior ore as the phosphorus contents of the pig

do not exceed .09 per cent. It may be readily seen that with such material the quality of the nails made must be of the best. They are very ductile, so that they can be bent double, and yet they are rigid that they can be driven into the hardest wood. The old trouble about the heads coming off, which has never been great with the Bellaire works, has entirely disappeared, and the drawbacks due to inexperience in making soft steel have also been overcome.

Stripping Armored Ships.

Sir Edward Reed, a recognized authority in shipbuilding, has placed before the public what the London Times calls a "tremendous indictment" of the British Admiralty, on account of their "inexplicable and infatuated course" in stripping the recent-built ironclads of two-thirds of their protecting armor, thus bringing about a marked inferiority as compared with the French. In support of his assertions, Mr. Reed says: "I have to state, and am prepared to demonstrate to any competent tribunal, that there is not one of these ten ships, the latest added to the British navy, that cannot be either capsized and sunk, or sunk without capsizing, without any shot or shell whatever being directed against those parts of the ship which are armored. In fact, they have been so far stripped of armor, as Mr. Barnaby has truly said, that they have been 'brought back to the old condition,' and are to all practical intents and purposes unarmored ships, with patches of armor on each side, such patches giving no sufficient protection to either the buoyancy, the stability or (therefore) the life of the ship. The French armored ships before referred to, and which have belts the entire, or almost the entire, length, must in all reason be expected to dispose of these English ships in a very few minutes by simply destroying their unarmored parts."

Mr. Reed alleges that the Admiralty have proceeded in flagrant violation of the principle heretofore accepted and avowed that "the fairest available approximate measure of the power of the ships is their displacement or total weight; that it always represents power of some kind." Bearing this principle in mind, he compares the displacement of 10 of the most recent-built British and French ships as follows:

British ships.		French ships.	
Name.	Displacement.	Name.	Displacement.
Ajax.....	8,490	Dévastation.....	9,659
Agamemnon.....	8,490	Foudroyant.....	9,652
Colossus.....	9,150	Brennus.....	9,750
Edinburgh.....	9,150	Amiral Duperré.....	10,487
Collingwood.....	9,150	Hoche.....	10,581
Rodney.....	9,600	Magenta.....	10,581
Howe.....	9,600	Marceau.....	10,581
Asson.....	10,000	Neptune.....	10,581
Bendish.....	10,000	Amiral Baudin.....	11,590
Camperdown.....	10,000	Formidable.....	11,411
Average.....	9,393	Average.....	10,470

The inference from the foregoing is that English ships have been made "unspeakably inferior" to the French, without any compensation for the qualities that have been sacrificed. While the thickest armor on the British ships given in the previous table is in all of them 18-inch, the French ships have in three cases 22 inch, and in five cases 17½-inch, and in two cases 15-inch, the average being in favor of the French ships. Briefly, Mr. Reed's argument is this: The British Admiralty, contenting themselves with protecting the vital parts of the ship, the vulnerable ends would render them an easy prey to the enemy. Allegations like these, from such a source, are a challenge for searching investigation. Furthermore, United States naval constructors will doubtless take good heed to profit from the expensive blunders of others in making further additions to our naval force.

A Big Blast.—The following account of a blast is taken from a San Francisco paper of late date: Recently the San Francisco Bridge Company received the contract for work on Section 6 of the sea-wall, which will extend from Vallejo to Pacific streets, and which will practically continue the sea-wall from Powell street to Folsom. It became necessary for the bridge company to secure a quarry. A tract of 8½ acres was obtained, fronting on and extending into the bay, and forming a high bluff which forms the northern extension of Visitation Valley. The bluff is about 60 feet high close to the water's edge. It is expected to yield the 90,000 tons of rock required to build Section 6 of the sea-wall. It has been tunneled recently by the employees of the bridge company in charge of Superintendent O'Neil. Eleven tunnels in all have been run and four have been exploded. There were 11,000 pounds of Judson powder to explode in the four tunnels. Each tunnel was 50 feet long, and extended to an L, in which was the powder. From the L to the mouth of each tunnel rock and dirt had been "tamped" in as hard as possible. The four explosions were to occur successively, the first to loosen the cliff and make it easier for the second to be become effective, and so on. The first explosion was awaited with some little apprehension by the harbor commissioners and other occupants of the tow-boat. But when it occurred, with a dull, heavy sound, and it became apparent that frag-ments of stone were not to fly through the air, there was a unanimous desire that the boat should move nearer the shore. The other explosions occurred soon after. No. 3 was a grand affair. A great section of the cliff was toppled over and huge boulders and tons of dirt rushed down to the water's edge. The blast was pronounced successful, and the quality of stone, on subsequent inspection, seemed satisfactory to the harbor commissioners. It was estimated by the engineers that the 11,000 pounds of explosives had displaced in about 10 minutes 35,000 tons of rock and earth.

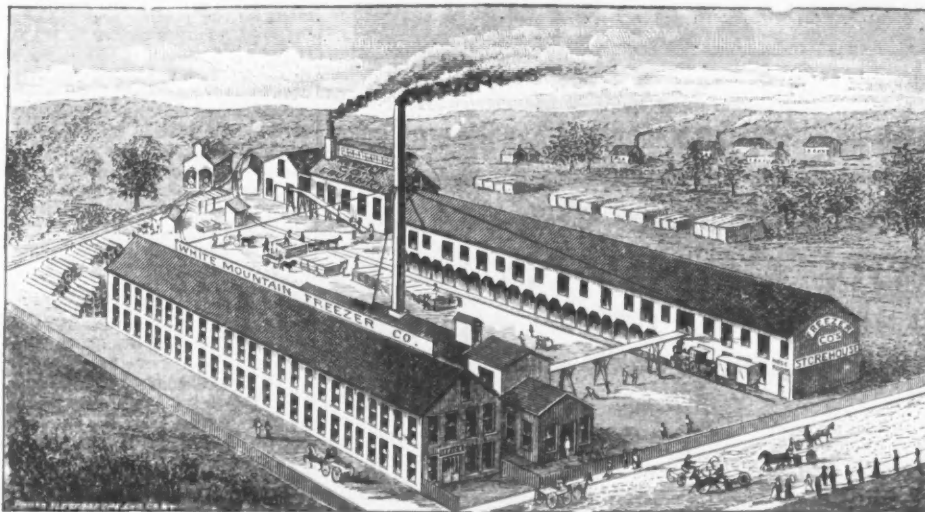
The latest official reports from India on the wheat harvest for the current season are to the effect that an average yield may be expected; also a large crop of corn.

White Mountain Freezer Co.



NEW PLATFORM FREEZER.

Sizes, 15, 20 and 25 quarts.



THE LARGEST FREEZER WORKS IN THE WORLD



POWER FREEZER.

Ready to operate. Sizes, 25 to 50 quarts.

IF YOU WANT THE BEST ICE CREAM FREEZER

Buy Sands' Triple-Motion "White Mountain."

The only Freezer ever made or patented having three motions. Can turning one way. Outside Beater and Cream Scraper combined, with floats extending to center, turning opposite to Can. Inside Beater, with floats extending outward, turning opposite to Outside Beater, thereby making three simultaneous motions, and producing fine, smooth cream.

White Mountain Freezer
Ready to Operate.

Sizes, 2, 3, 4, 6, 8, 10, 15, 20, 25 and 50 quarts.

It is Utterly Impossible for any Single-Beater Freezer to Produce the Same Results.

They freeze quicker than any other on the market, thereby saving time, ice and salt. The Tubs are chemically filled and are Water-Proof.

NO ZINC IN CONTACT WITH CREAM, BUT TIN INSTEAD. OXIDE OF ZINC IS A WELL-KNOWN POISON.

"Never put anything into the Human Stomach prepared in vessels coated with Zinc."—The Metal Worker.

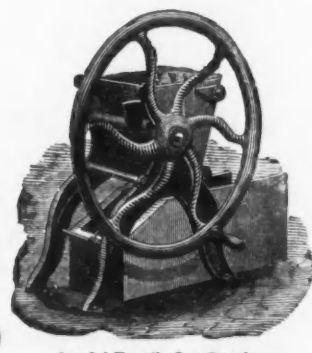
All Outside Irons Galvanized. Packing Tubs and Cans, All Sizes, Wholesale and Retail

Sold by the Trade everywhere. Send for Circular and Price List of the Celebrated Freezer. Address

WHITE MOUNTAIN FREEZER CO.,

101 East Hollis Street,

NASHUA, N. H.



Sands' Family Ice Crusher.

BLAIR MANUFACTURING COMPANY, SPRINGFIELD, MASS., U. S. A.

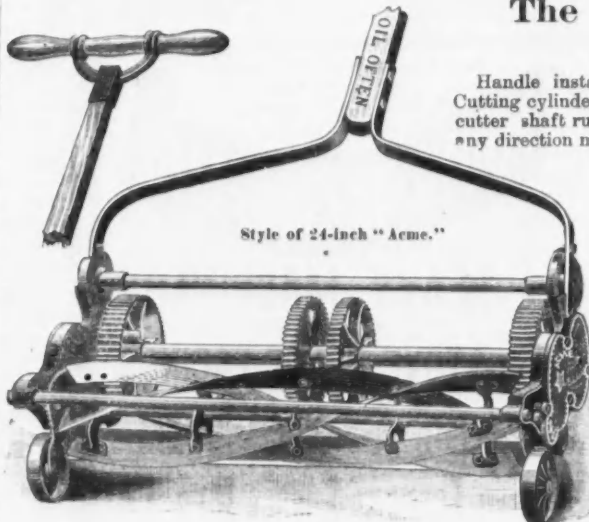
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The only practical
FORWARD-CUT
ROLLER MOWER
ever on the market,
combining Durability
with extreme Light
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Style of Medium-Size
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Style of 24-inch "Acme."

The "Acme" Lawn Mower.

MERITS OF CONSTRUCTION:

Handle instantly attached or detached without touching the Mower Cutting cylinder has four knives, all tempered to a standard. Steel cutter shaft running on Steel gibs so arranged that all possible wear in any direction may be compensated for. Patent cam pawl and ratchet, absolutely positive, silent and durable. Truck wheels run on hardened steel studs, protected from dirt, &c. Truck arms encircle cutting cylinder journals, giving greatest possible range in height of cut. Powerful traction. Perfectly silent. Easily operated. All sizes geared at each end. Every part made to standard gauges, and interchangeable.

RANGE OF WORK.

Cuts high terraces with rope attachment, cuts borders, cuts mounds, cuts over holes, cuts within one inch of a wall, fence or tree. Cuts wet grass without clogging. Cuts heavy, tough grass with comparative ease, and especially adapted to cemetery work.

Style of Medium-Size
"Acme."

EXCELSIOR AND CLIPPER LAWN MOWERS.

Excelsior Side Wheel.



For LIGHTNESS OF DRAFT, QUALITY OF WORK, SIMPLICITY OF ADJUSTMENTS and SUPERIOR WORKMANSHIP, our EXCELSIOR LAWN MOWERS, both for Hand and Horse Power, occupy the FIRST PLACE IN THE MARKETS OF THE WORLD.

Excelsior Roller.



Our NEW CLIPPER LAWN MOWER, which has been greatly improved for the coming season, is presented to the Trade after long and careful experiments with a view to produce a good Lawn Mower at a low price. Don't think the CLIPPER belongs to that worthless, trashy class of Lawn Mowers whose only recommendation is cheapness. It is a good Lawn Mower at a low price.

New Clipper.



In order to meet the varied demands of both home and foreign markets, we are making over 50 different styles and sizes of Lawn Mowers. Hence we can furnish a Lawn Mower suited to any climate or country. EVERY MOWER GUARANTEED. Send for Circular and Price List. Address

CHADBORN & COLDWELL MFG. CO., Newburgh, N. Y., U. S. A.,

Or 223 Upper Thames Street, LONDON, ENGLAND.

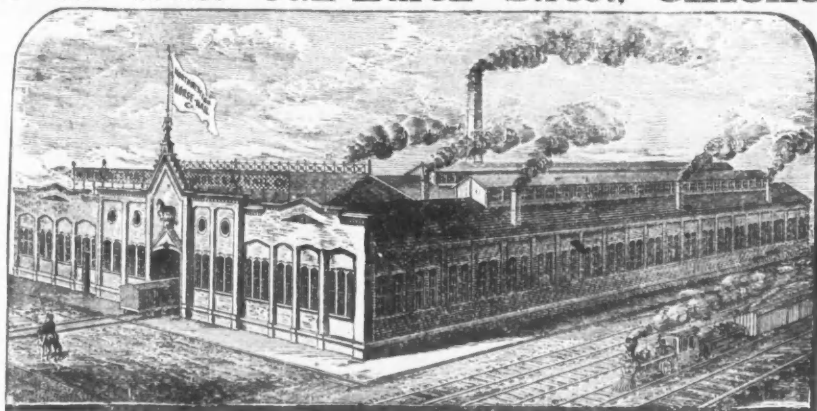
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No. 88 West Van Buren Street, CHICAGO.

Regular Head.



OUR NAILS are manufactured from the finest brand of Swedish Iron, of which we use the entire product.



City Head.



IN QUALITY, uniformity of shape and style, they are unequaled. They are the safest nail to drive.

For Sale by All the Leading Houses Throughout the United States.



COLD TEST OF IRON USED EXCLUSIVELY BY NORTHWESTERN HORSE NAIL CO.

A. W. KINGSLAND, Secretary.

THE CUT BELOW represents our latest patent "Wonder" Cross-Cut Saw, of which style of teeth we shall use for our Cross-Cut One-Man Pruning and Buck Saw. This tooth has all the direct fast cut of the Lightning, combined with the clearing teeth of the Champion, making it, as its name indicates, the Latest Wonder, and by actual test we decide an advantage of 20 per cent. over our former world-renowned Lightning Saw. Having newly organized January 26th, 1885, as the E. M. Boynton Saw and File Co., we shall be prepared to fill any orders for the above, as well as for goods which have been furnished our customers throughout the world for the last 14 years.

Respectfully yours,

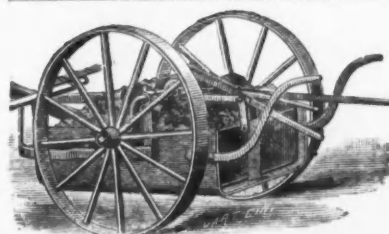
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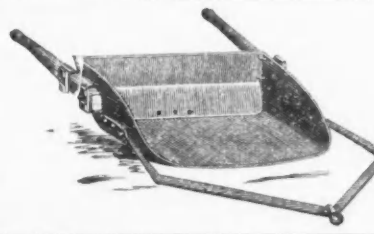
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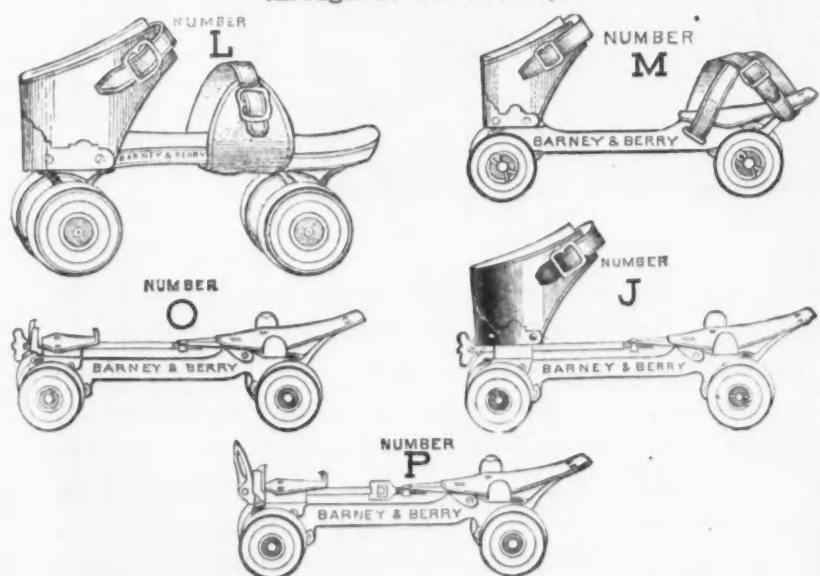
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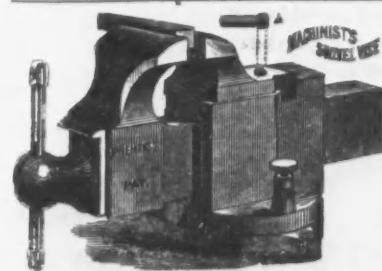
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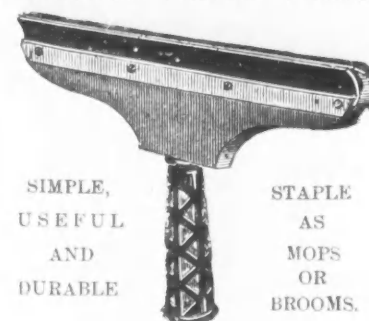
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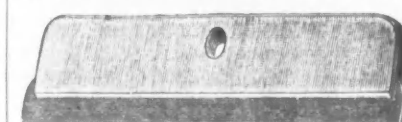


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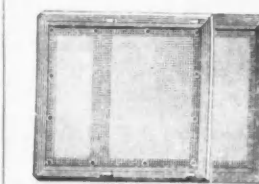
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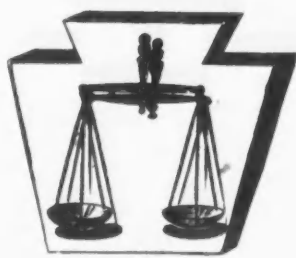
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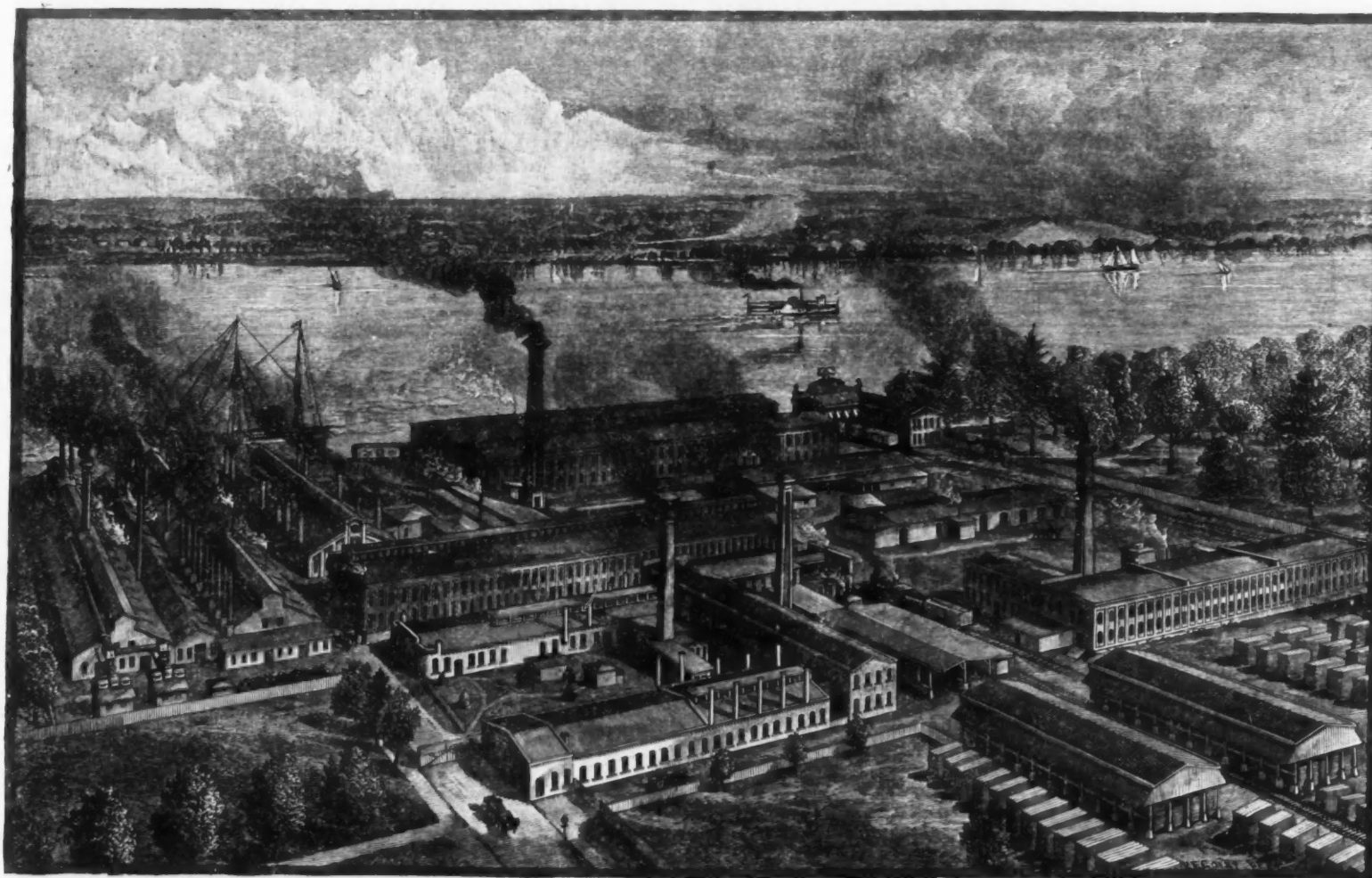
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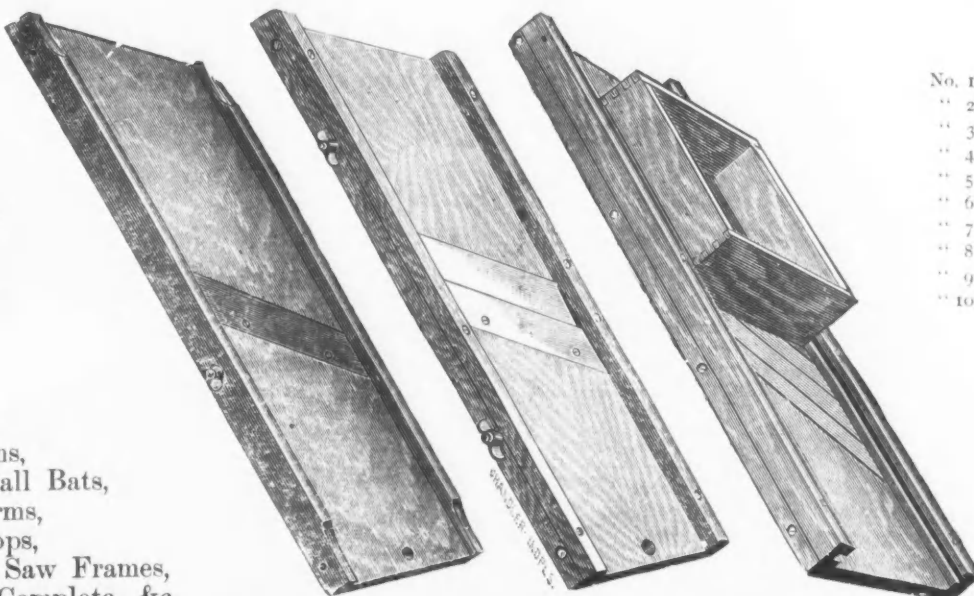
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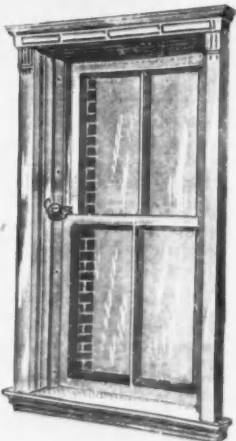
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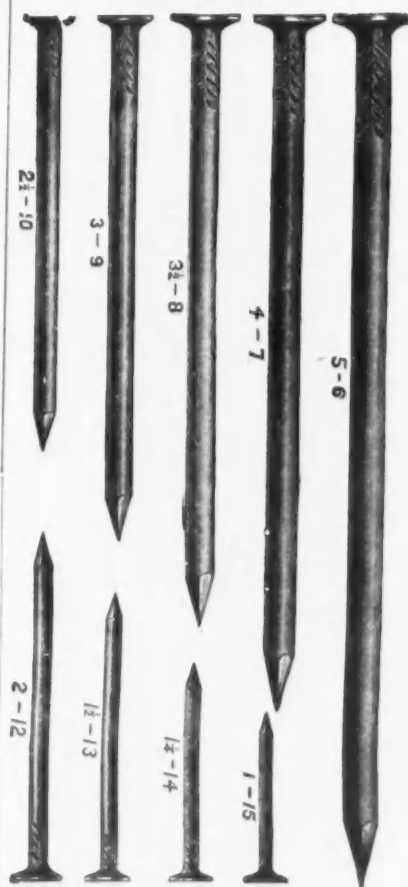


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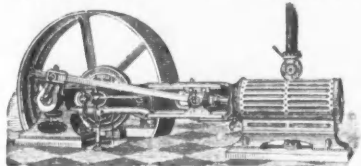
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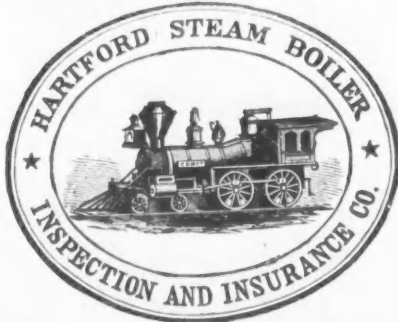


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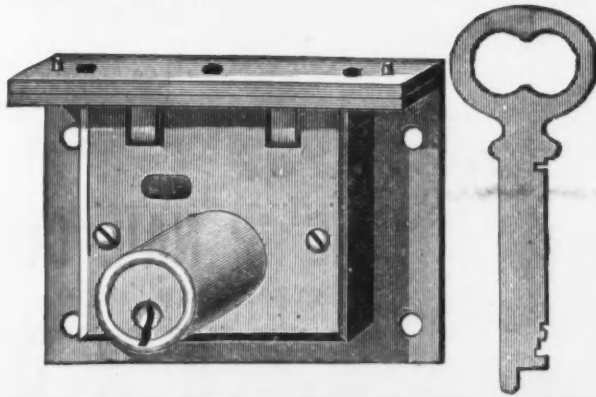
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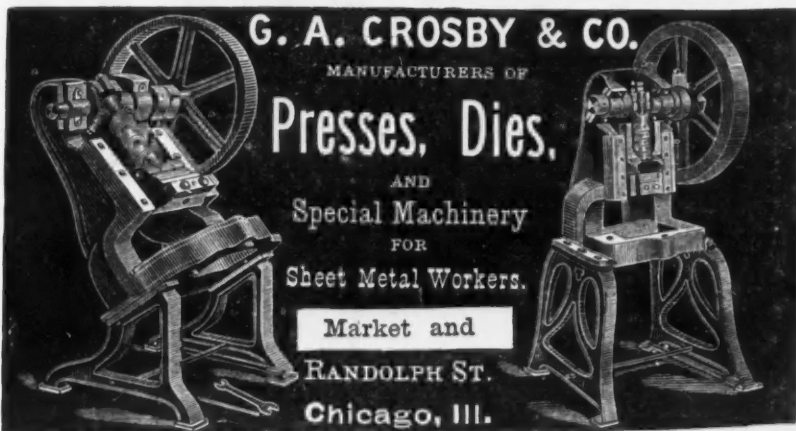
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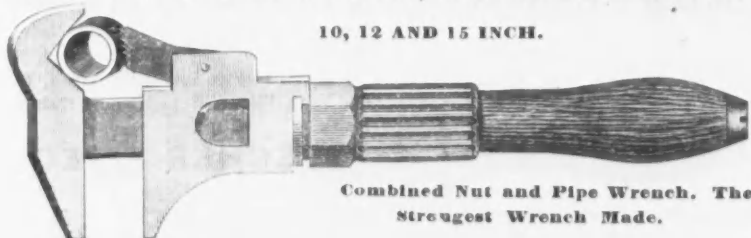
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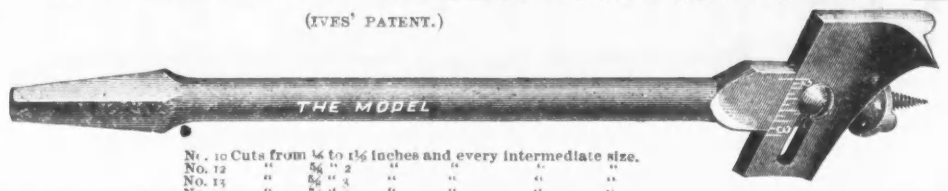


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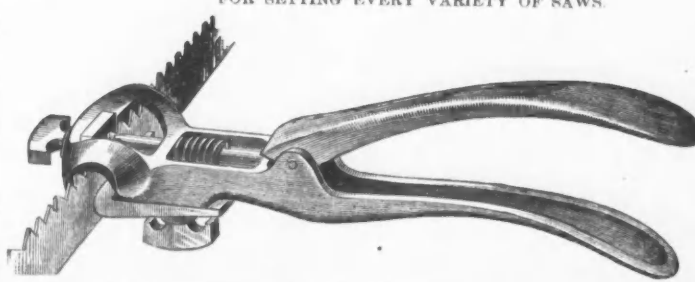
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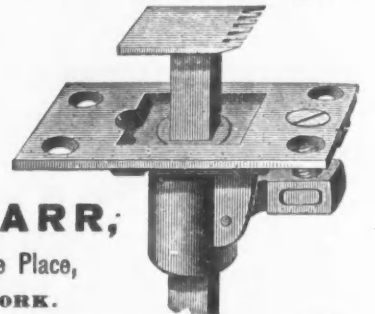
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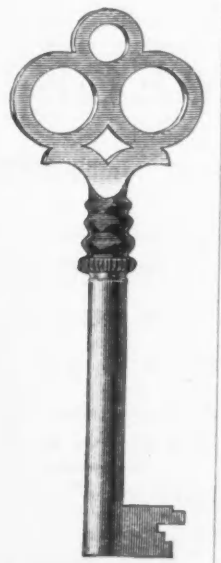
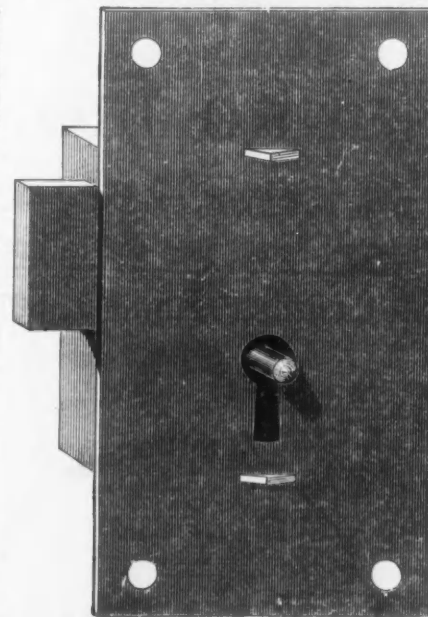


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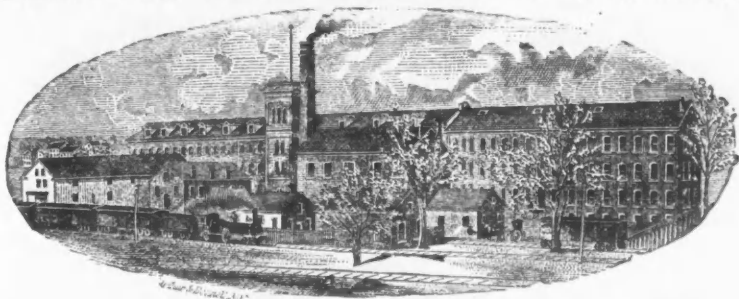
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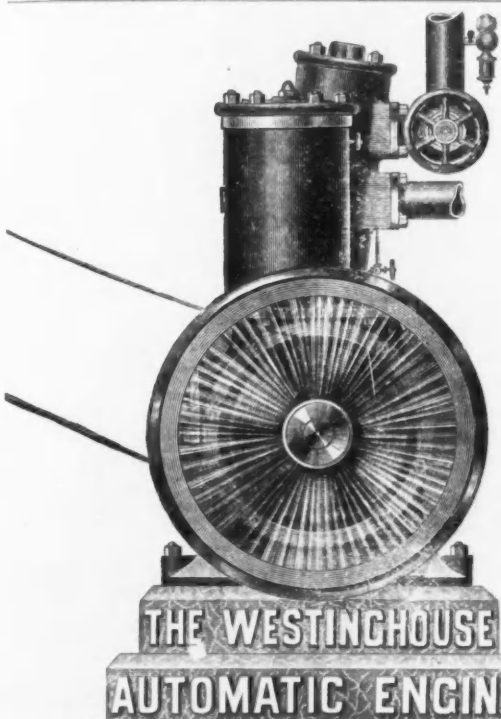
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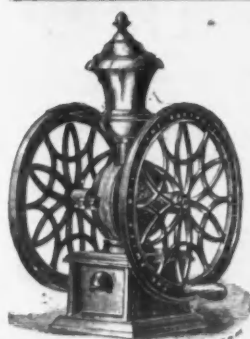
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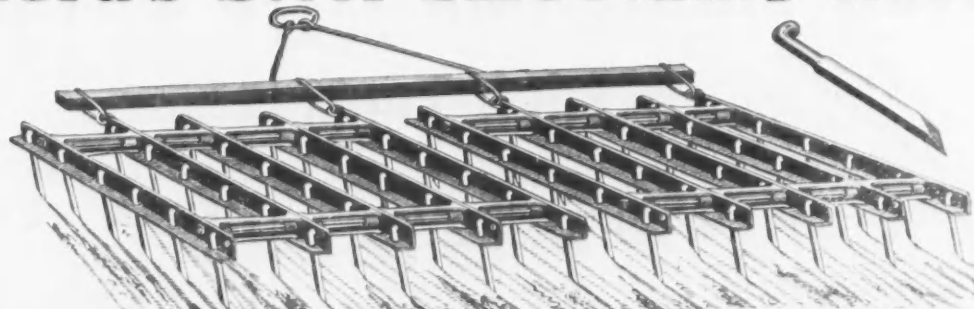


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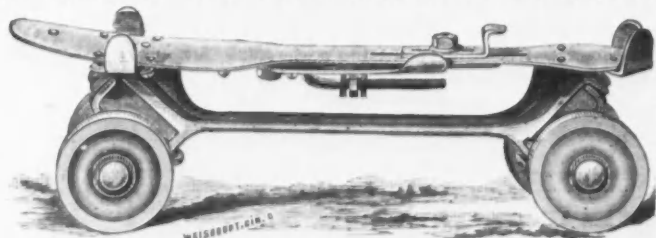
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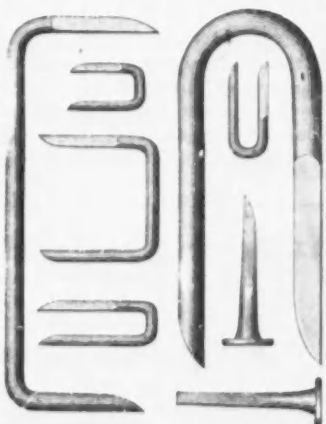
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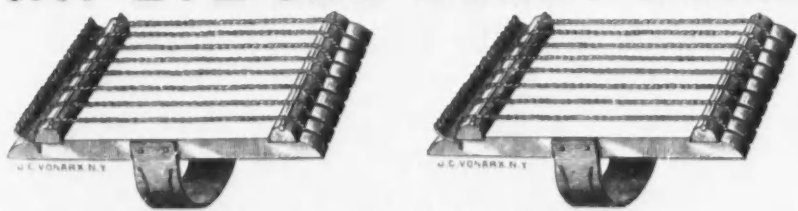
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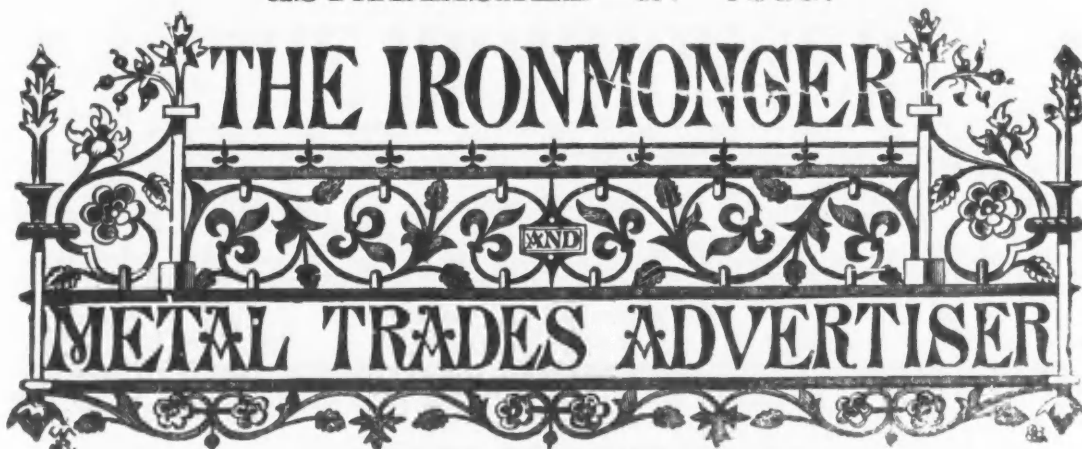
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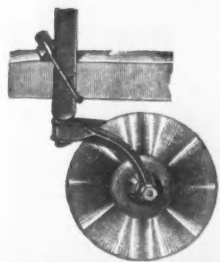
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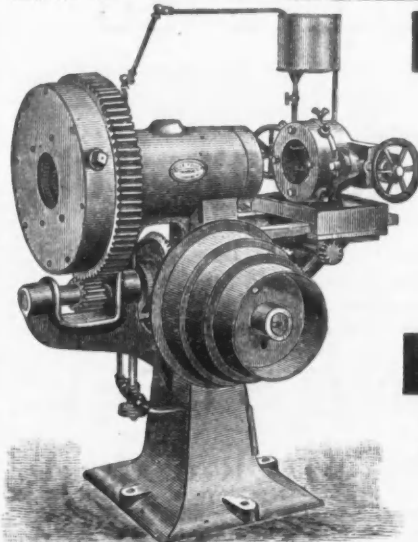
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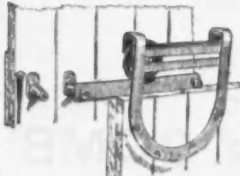
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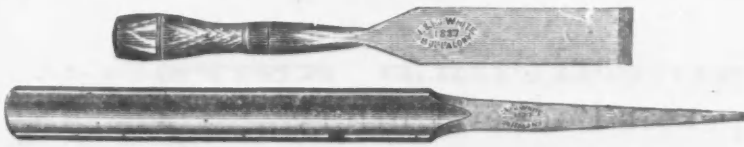
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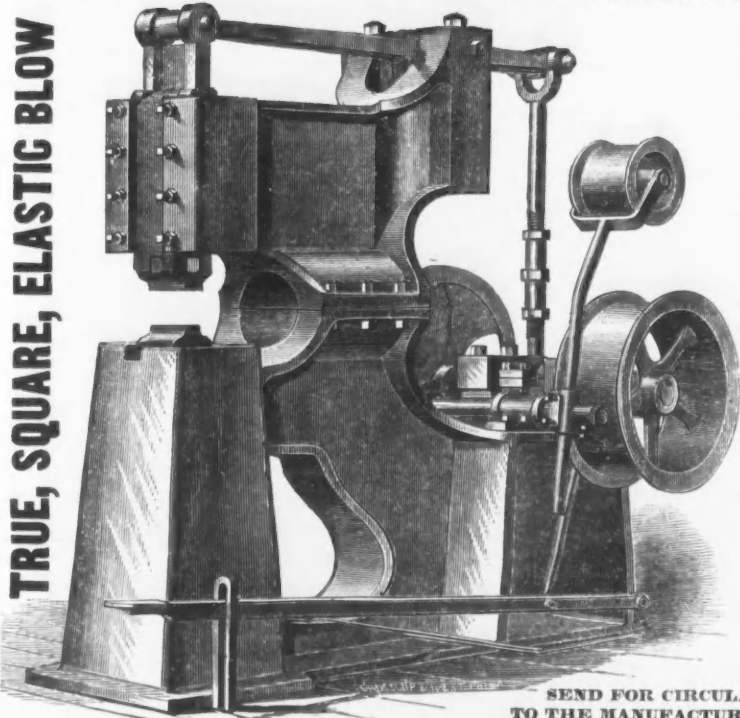
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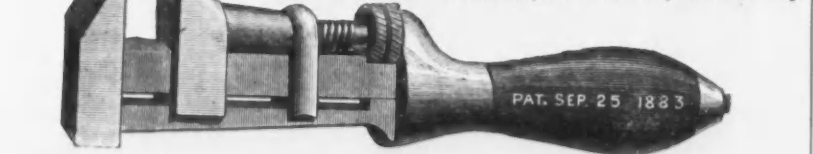
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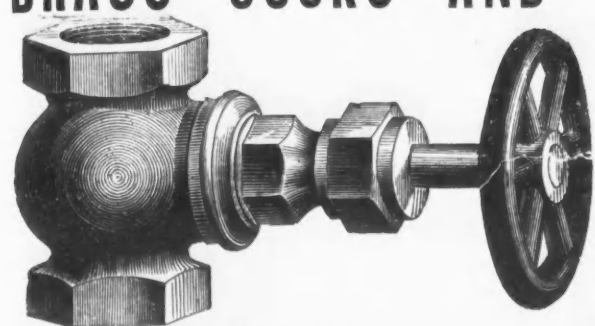
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Oak Extra, 1/2" to 1 1/2"	15	20	25	30	35	40	45	50	55
Oak Extra, 1/2" to 1 1/2"	15	20	25	30	35	40	45	50	55
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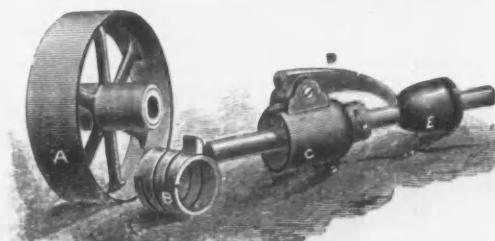
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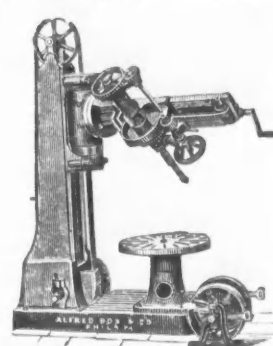
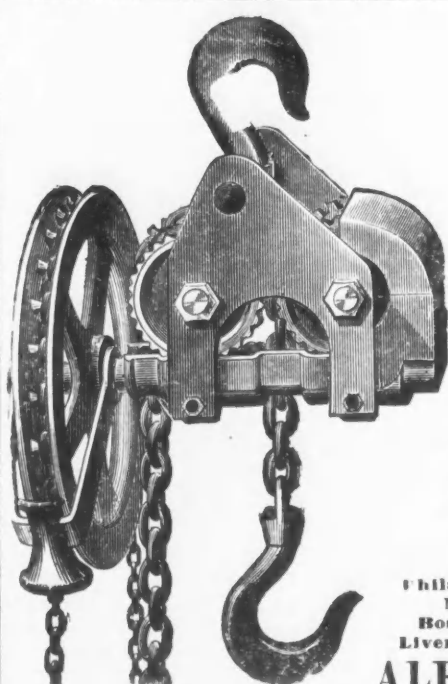


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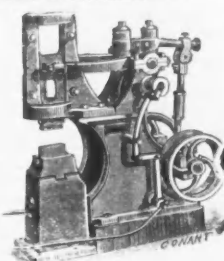
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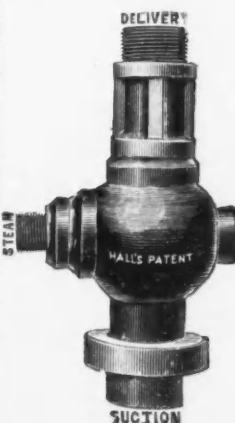
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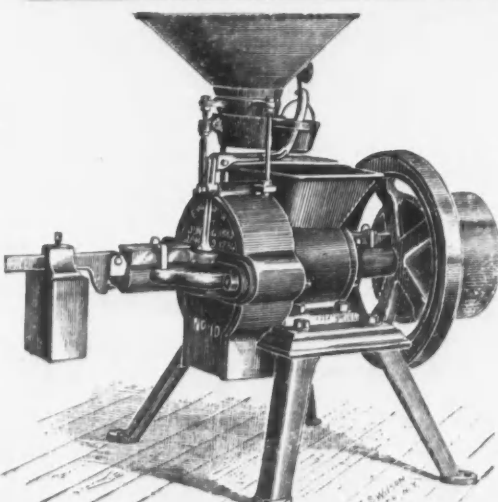
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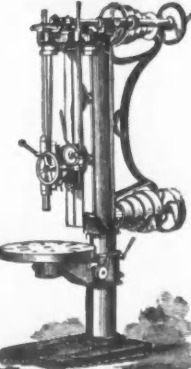
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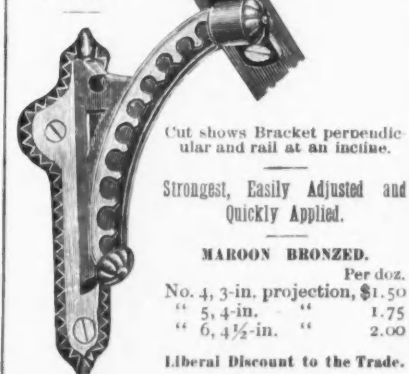
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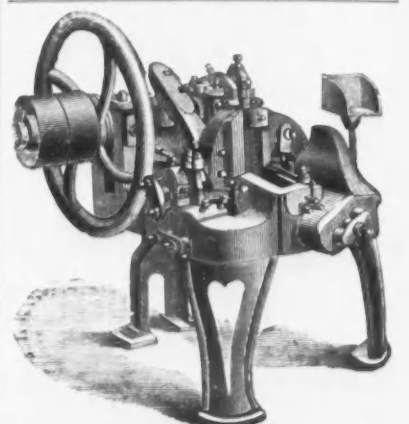
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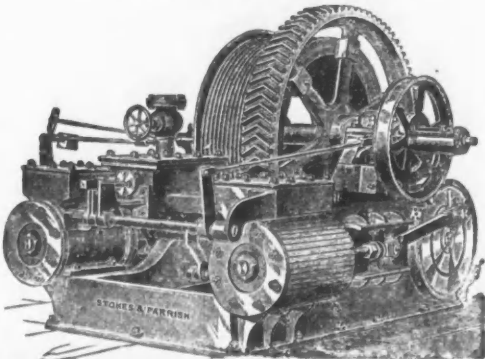
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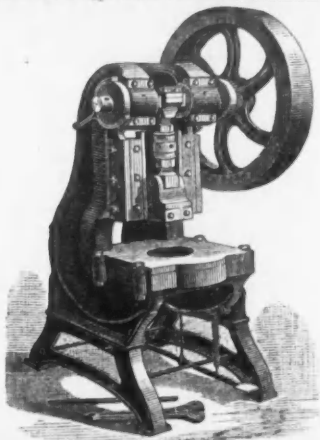
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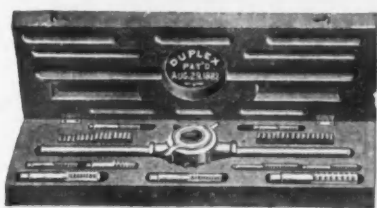


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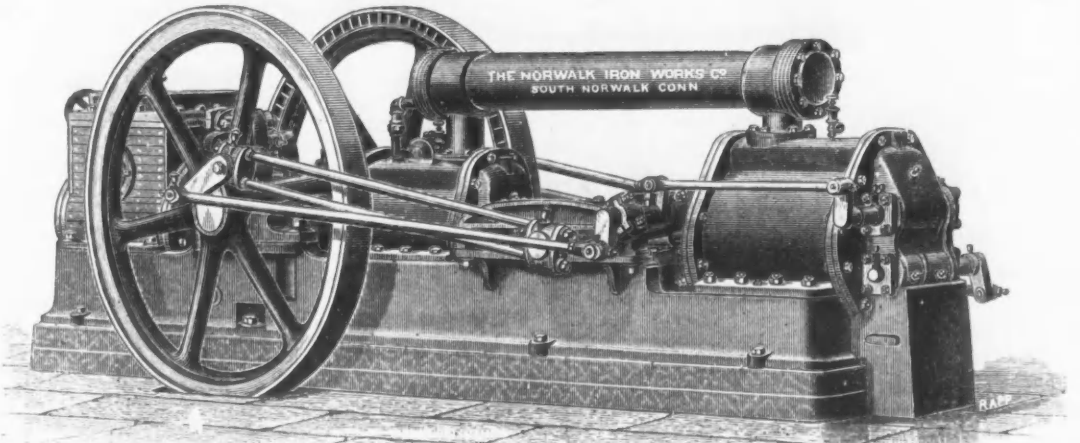
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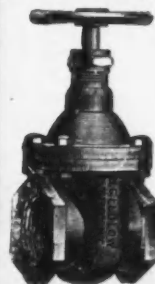
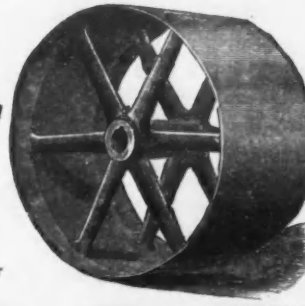
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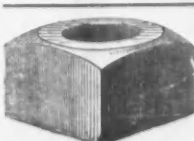
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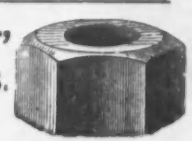
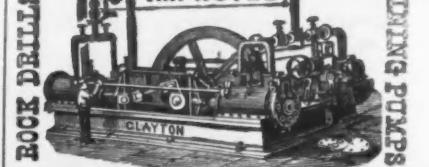
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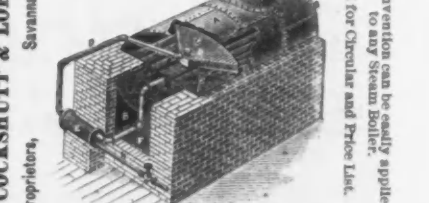
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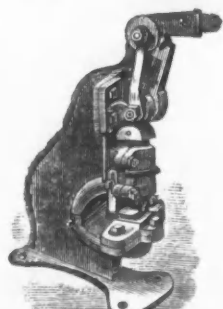
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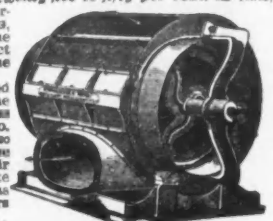
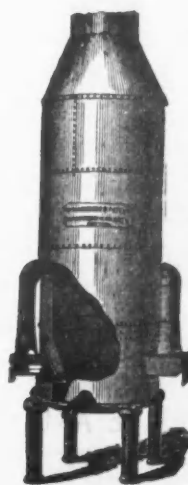
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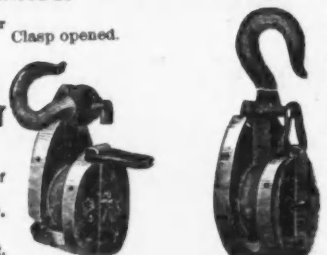
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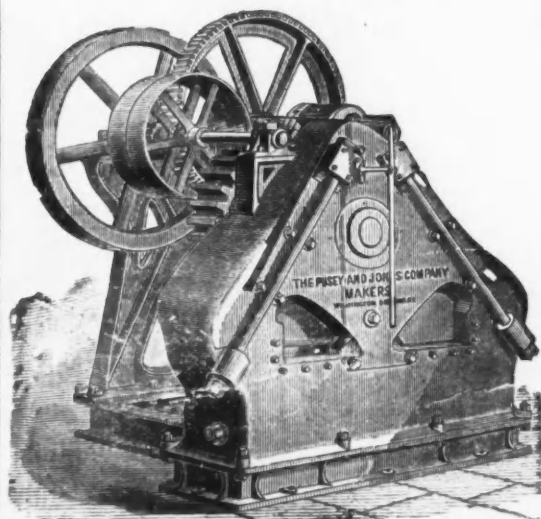
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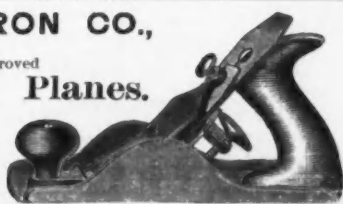
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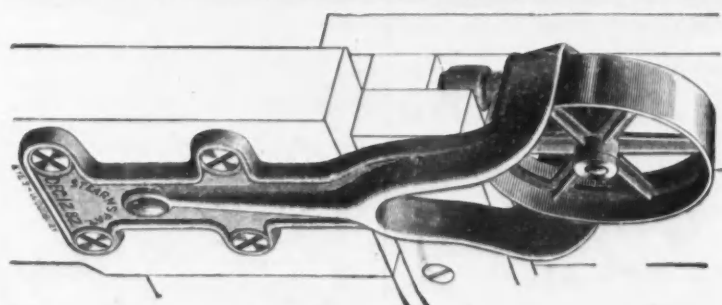
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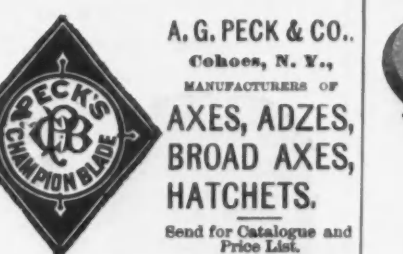
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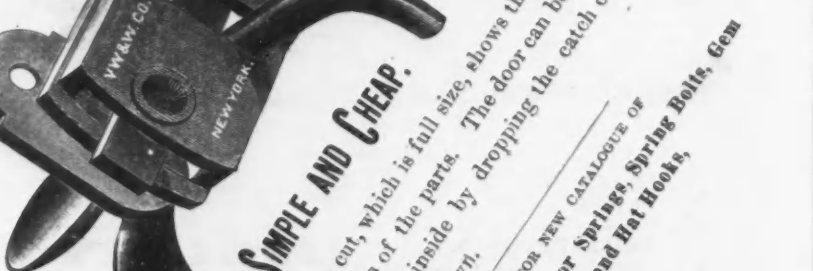
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